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# **Worldwide Report**

**ENVIRONMENTAL QUALITY**

**No. 243**



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10 March 1980

WORLDWIDE REPORT  
ENVIRONMENTAL QUALITY

No. 243

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**BILL SUBMITTED TO USSR FOR OIL LEAK DAMAGE**

Helsinki HELSINGIN SANOMAT in Finnish 23 Jan 80 p 8

[Text] A bill somewhat short of 15 million marks will be sent to the USSR for the oil damage that occurred last spring in Aland.

The claim for damages will be sent on Wednesday [23 Jan] through the Finnish Embassy in Moscow to the Latvian owner of the tanker Antonio Gramsci that caused the oil accident, reports General Manager Heikki Mutttilainen from the Maritime Administration.

Sweden already earlier decided to claim an over 60 million mark compensation for the damage caused by the same oil.

The Latvian tanker, the approximately 30,000 ton Antonio Gramsci was leaving with a full load from its home harbor Ventspils towards the Federal Republic of Germany, when it ran aground inside the harbor breakwater.

**Oil in Ice Fields**

At the grounding, the bottom of the vessel ripped open, and approximately 5,500 tons of raw oil poured into the sea and quickly fastened onto the sides of ice fields and to the ice sludge. Ventspils is situated at the mid-point of the Baltic Sea, and its harbor is seldom frozen. The Soviets tried to keep the oily blocks of ice from escaping to the outer sea, but they failed, and a strong southern storm started to convey the blocks toward the Finnish and Swedish coasts.

When the ice started to melt in April, the scope of the catastrophe was brought home: the oil encircled first the outer islands of the Aland Sea, but after the wind had changed course, it continued towards the Stockholm archipelago. All in all, the oil was on the move for about a month.

The bill submitted by the Finns is divided so that the biggest claim is by the Maritime Administration with less than 8 million marks, the Defense Forces's share is 4.2 millions, the Border Patrol Establishment's 1.3 million and Aland Provincial Government's about 1.2 millions. The estimate was ready as early as last October, but it has been since further adjusted.



In addition to the Antonio Gramsci owners, a claim is also being received by the London representative of the Bermuda insurance agency that insured the vessel.

According to Mutttilainen, it is not possible to estimate at this point when the compensation claims will be settled. It is a question of a fairly exceptional case, and there is no knowledge of a corresponding case in Finland any more than in the USSR, Mutttilainen states.

In cases where the accident occurs within the borders of one state, the compensation practices are fairly clear. But, according to Mutttilainen, there are no precedents where three countries are claimants, and each is in a different situation as far as the compensations are concerned.

Finland has not yet joined the international compensation fund for oil accidents, and this might have an effect in the settlement of the claim. The amount of the compensation is however not necessarily connected with this.

Possibilities of receiving compensation for oil accidents occurring on the sea will improve in Finland in future. Last Friday [Jan 18], the Diet was given proposals for ratification of the international agreements concerning the responsibilities and compensations for oil accidents.

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WORLDWIDE AFFAIRS

BRIEFS

SOVIET-FINNISH SEMINAR--A Soviet-Finnish seminar devoted to protecting the environment against atmospheric pollution has been held in Helsinki. The great importance of cooperation in this sphere was stressed during the seminar. [Text] [LD041531 Moscow PRAVDA in Russian 28 Jan 80 p 1 LD]

CSO: 5000

## AUSTRALIA

### BRIEFS

ALLIGATOR WEED CONTROL PROGRAM--Australia has started a programme for biological control of alligator weed, a South American water plant which is threatening Australia's waterways. The Australian Commonwealth Scientific and Industrial Research Organization (CSIRO) has released a small black and yellow beetle-also a native of South America-which it hopes will provide most of the answer. [Text] [Dacca THE BANGLADESH OBSERVER in English 3 Feb 80 p 13]

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## BIOCLIMATOLOGICAL CHANGES IN BANGLADESH

Dacca THE BANGLADESH OBSERVER in English 12 Feb 80 p 5

[Article by M. Ismail]

[Text] In the course of earlier works some changes have been detected in the climatology of Barisal zone where a continental climate prevails in recent dry seasons in place of its long known maritime one of earlier days. This change in Barisal zone has been attributed to the recent higher temperature range, a characteristic feature of continental climate, in addition to an altered wind movement and rainfall pattern because of reduced water mass in the Meghna estuary. This change in and near the estuary, the prominent route of water cycle of the region, has been identified to be the cause of recent decreased rainfall in the region leading to recurring drought and aridity here. Present studies on bioclimatology dealing with water budget for life processes, provide further evidence of this change. Some more natural and artificial phenomena such as, rapid siltation and destruction of vegetation, cover of silted areas by biotic agencies have been noted recently to create more and more exposed land mass in the estuarine zone taking advantage of its currently occurring water reduction which involves a loss of the useful inland maritime climate of the country.

### Water Budget and Moisture Index Studies

The various methods by which vegetation-climate of the world has been classified were given by Misra and Puri (1954). The water budgets are estimated by various authors, such as Snedaker (1977) and Tosi (described in Holdridge, 1972). It was shown that the plant-climate classification of Indo-Bangladesh region by the Thornthwaite's (1948) method seems to be the best (Puri, 1966). Thornthwaite developed an approach paying attention to the role of moisture stored in the soil and the energy relations involved both in evaporation and transpiration, e.g. evapotranspiration. As actual values of evapotranspiration cannot be developed easily, the standard adopted for it was the determination of the potential evapotranspiration or moisture need which is the value that would be attained from a surface

covered with vegetation if moisture remained in adequate supply. The value of the potential evapotranspiration is estimated by Thornthwaite from mean temperature and day length (or latitude), the latter being a measure of radiation. Knowing the potential evapotranspiration and rainfall, it is possible to work out geographically and statistically the moisture available for recharging the soil month by month and the amount that will be withdrawn, so that each wet month will show a surplus (s), and a dry month a deficiency (d) of water needed for evapotranspiration. Annual values for s, d and potential evapotranspiration can be obtained as totals of the months by figure and a moisture index (Im) calculated from the empirical formula of Thornthwaite given below:  $Im = 100s / \text{God Im} = \text{Water need}$  following this, moist climates that are generally favorable for most life processes show positive values of Im and dry climates negative ones. The sub-types of this bioclimatology have a distinct moisture index given in Tables 1 and 2. These sub-types resemble Thornthwaite's earlier classification with the difference that the present scheme is more rational (subrahmanyam, 1955; Puri, 1960)

Table 1 Classification of climatic types in relation to water budget.

Climate type	Moisture index
A Perhumid	100 and above
B <sub>4</sub> Humid	80 to 99
B <sub>3</sub> Humid	60 to 79
B <sub>2</sub> Humid	40 to 59
B <sub>1</sub> Humid	20 to 39
C <sub>2</sub> Moist sub humid	1 to 19
C <sub>1</sub> Dry sub-humid	-20 to 0
D semi-arid	-40 to 19
E Arid	-60 to 39

Table 2 A comparison of salient features of water budget for some stations.

Stations	Period	Water need (mm)	Water surplus (mm)	Water deficit (mm)	Moisture Index
Satkhira	1931-60	1524.1	536.1	617.6	10.8
Satkhira	1961-76	1496.7	437.7	308.0	16.8
Khulna	1931-60	1549.8	510.5	507.6	13.2
Khulna	1961-76	1574.1	661.1	518.8	22.2
Barisal	1931-60	1543.4	988.7	498.8	44.6
Barisal	1961-76	1514.9	774.0	492.7	31.5

### Discussion

A comparative study of moisture indices of Satkhira, Khulna and Barisal given in Table 2 reveals that Satkhira and Barisal in recent years behave in a distinctly opposite manner, in the former, a large reduction of both

water surplus and water deficit indicates clearly the reduction of water there in the wet season and an increase of it in dry season. This phenomenon increases thereby the moisture index value of Satkhira from a lower figure of 10.8 to a higher one of 16.8 as opposed to the condition prevailing at Barisal where there is a sharp decrease of it (moisture index). Khulna too, as reported earlier (loc. cit.) behaves in a manner more or less similar to that of Satkhira showing an increase of moisture index value there. The climatic type of these two stations (Khulna and Satkhira, the stations far away from the Meghna estuary) practically remains the same, i.e. C2 moist sub-humid or close to its next higher moisture types of B1 humid shown in Table 1 and 2. The behaviour of Barisal, the station in the vicinity of the Meghna estuary, however, is very significantly noteworthy because of its recent tendency of desertification shown by a substantial reduction of the moisture index from its earlier higher value of 44.6 to its recent lower one of 31.5 (Table 2) altering distinctly its climatic type from the moist B2 humid to drier B1 humid. This recent behaviour of Barisal in having a drier climatic condition of continental nature in place of its earlier maritime one (resulting from influences of the then more expansive maritime Meghna estuary) as discussed in the Regional Seminar on the Disaster Preparedness held in Dacca in December 1979, is thus further substantiated by the present study.

It is further to be noted here that because of recent reduction of Meghna estuary water extensive land masses have appeared to create a continental climatic condition there to adversely affect the normal funnelling process of water vapour towards the north reported earlier (loc. cit.). The vegetation cover which is well known for its temperature range controlling ability (cf. Daubet mire 1959) to mitigate these adversities, cannot flourish under the currently prevailing circumstances in the estuarine zone where the people often remove the tops of widely grown natural tall grasses for thatching and other house construction purposes. These deep rooted tall grasses with their poor shade-casting ability cannot be easily removed for growing better plant species because of high expenditure involved. Again, because of occasional and uncertain erosion people often avoid taking care of these new land masses. Curiously enough, the dispute regarding the ownership of these land masses and frequent theft and dacoities occurring there often discourage people's effort to vegetate the lands aggravating further the unfavourable climatic condition noted above.

Another notable feature of these new land formations in the estuary is the danger for birds life, such as ducks. From these new land the hunters can approach the birds easily to disturb them too much. It is probably for this reason a very large number of wild ducks are noted recently to take their daytime shelter in the well protected big dug tank of Durgasagor Dighi in spite of its location in the densely populated area of the Barisal district.



## BANNED CHEMICAL 245-T STILL IN USE HERE

Hong Kong SOUTH CHINA MORNING POST in English 7 Feb 80 p 7

[Text]

A dangerous chemical which has been banned in the United States, Holland, Italy, Sweden and Norway is still in use in Hongkong.

And yet there have been recent calls in Britain for the toxin to be the subject of an inquiry by the European Economic Community.

The chemical — a herbicide called 245-T — caused a widespread outcry in Australia two years ago.

It was alleged that the herbicide could cause an incurable nervous disorder in men and had direct links with the births of deformed babies.

In the United States it has been linked to miscarriages, and in parts of England employees of city councils have been banned from using it.

The reason it is so poisonous is that it contains a highly

dangerous substance called dioxin.

Inhalation of the vapour from the herbicide can lead to poisoning and the toxin can form a residue in the body which accumulates to affect internal organs.

It may be five or 10 years before its effect becomes apparent.

The herbicide has been used widely in agriculture.

But according to the senior crop development officer of the Agriculture and Fisheries Department, Mrs Vera Lee, its use in Hongkong is restricted.

And, she said, it is never used for agricultural purposes as its main use here is to control dense weed growth on areas of rough land and railway tracks.

Mrs. Lee added that the amounts imported for local

use are restricted, and both imports and exports of the chemical must be registered.

She said we use far less of the chemical than other places because it is simply not suitable for Hongkong.

There are, she explained, cheaper and more effective weed-killers available here.

Mrs Lee said that the Agriculture and Fisheries Department is well aware of the dangers of 245-T.

But she revealed that Hongkong does not plan to ban it, since safety precautions have already been taken by ensuring that it is not used where it might be dangerous.

"There are simply different controls in different countries," she commented.

"And because it is banned in some places, it does not mean we have to ban everything they ban."

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PAKISTAN

BRIEFS

RECLAMATION OF WATER-LOGGED LAND--Nasrabad, Feb 8--In the eastern Nasirabad, efforts are underway to reclaim the ten thousand acres of productive agricultural land which affected by the twin menace of water logging and salinity [as printed] A canal has been excavated to drain out the excess water from water-logged land and to make it productive for agriculture. The drain is nearing completion here, after about four year. [as printed] The rural populace which had left its herat homes in search of food and fodder has now started returning to eastern Nasirabad. [Quetta BALUCHISTAN TIMES in English 10 Feb p 4]

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FIRST ALL-CHINA ENVIRONMENTAL HEALTH SYMPOSIUM HELD IN SHANGHAI

Beijing GUANGMING RIBAO in Chinese 16 Dec 79 p 2

[Text] Shanghai, 15 Dec 79, [XINHUA]--How does the environmental health science contribute to the modernization of socialist construction? This is the important problem discussed at the First All-China Environmental Health Symposium of the China Medical Society held in Shanghai. More than 250 environmental health workers from the whole nation, including 29 provinces and municipalities and autonomous regions, held that this field of science should put emphasis on investigating the effects of environmental pollution on human health; and provide a scientific basis for the adoption of measures to protect and improve the environment so as to insure the people's health and bring happiness to the future generations.

In recent years Chinese environmental workers have launched large scale investigations on air pollution in more than 100 cities, and water pollution in more than 200 rivers, lakes, reservoirs, and coastal areas, on noise pollution in cities, and on the effects of air and water pollution on human health in many regions. A series of investigations and research led the environmental health workers to submit such views: some mines and enterprises have not been paying attention to eliminating pollution and protecting the environment in the course of creating material wealth. They were even willing to acquire materials and products at the expense of lowering the quality of environmental health. Therefore, simultaneous with the rapid progress in modernizing construction, it is an urgent matter to take effective measures to protect the environment. Especially, in developing industrial enterprises and new towns, it is very necessary to have good preventive health supervision, so that the "three wastes" control and main production projects may be designed, constructed, and put into operation simultaneously. The prevention of pollution can create a good environment for the people. Participants at the conference recognized that it is extremely necessary to promote the "three wastes" control by nationally unifying the methods of monitoring and checking the air and surface and subterranean water on the basis of the "drinking water standards", "health standards for industrial enterprise designs" and "standards for discharging industrial three wastes," which have been revised according to the actual



conditions in China in recent years. From now on, it is also necessary to institute many kinds of health standards that are helpful to the "four modernizations" construction program, expand the special force engaged in improving environmental health science and conduct intensive investigations and study in order to improve the work standards of environmental health science.

During this symposium, the Environmental Health Science Association of the China Medical Society was formed, and 58 committee members were selected. Professor Yang Mingding of the Shanghai First Medical College was elected as chairman of the association and Wang Zishi, deputy director of the Institute of Hygiene under the Chinese Academy of Medical Sciences, Professor Hu Hansheng of the Beijing Medical College, and Professor Cai Hongdao, of the Wuhan Medical College as deputy directors.

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INVESTIGATION OF INDUSTRIAL POLLUTION REPORTED

Beijing RENMIN RIBAO in Chinese 6 Jan 80 p 2

[Investigative Report: "Why Is It So Difficult To Resolve the Problem of Environmental Pollution?"]

[Text] Editor's Note: We have received many letters from our readers on the problem of industrial pollution. We have referred these complaints to the Environmental Protection Leading Group of the State Council. The group's comrades explained to us the present condition of the work of environmental protection and the existing problems. According to the problems mentioned and clues provided by them, we sent our reporters to visit several industrial cities in Jiangsu and Anhui provinces and prepare a number of reports of investigation, one of which is first published here. This report presents certain problems of general concern.

We came to Tongling City in Anhui Province, and heard complaints from many readers who said: Those who live in the neighborhood of the First Smelting Plant of the Tongling Non-Ferrous Metal Company are victimized seriously. In spring and summer, one feels as if one is at the end of autumn and beginning of winter. All the trees and grass become withered and yellow, and often the trees in large areas are all bare. Even in hot weather, all the houses keep their doors and windows closed. Those who are not very strong physically suffer from headache and feel dizzy and nauseated all year round. The number of patients with illness of the respiratory tract and the five sense organs [ears, eyes, lips, nose and tongue] has increased rapidly. Cases of aleukia and aleukocytosis are also fairly common. In the nearby factories, machines and equipment quickly rust and corrode, their products seriously deteriorated in quality. The First Smelting Plant also suffers from corrosion of its own equipment, and has to use 400 tons of steel material every year to carry out repairs. In the surrounding communes and production brigades, the output of crops generally has decreased by about 20 percent. The plant has to pay them money in compensation for damages at about 25,000 yuan every year.

What is so damaging? It is the smoke and gas of sulfur dioxide from the exhaust of the process of producing crude copper in the plant. The plant was established in 1950 and put into operation in 1953. However, the smoke and gas of sulfur dioxide produced in the process of production were not recovered for many years. Only in recent years has the plant built a device for recovering about 20 percent of the smoke and gas. Every year there are still more than 70,000 tons of sulfur dioxide released into the air. The smoke and gas spread over four counties. In all places within their reach, the soil and air have changed; in all trees, vegetable and fruit crops, the contents of sulfur, arsenic and lead greatly exceed those in the same kinds of plants in non-polluted areas. In places at a distance of 1,000 meters from the plant, the content of sulfur dioxide in the atmosphere exceeds the state specified standard by 23 times, the contents of arsenic and lead in leaves of the glossy privet are higher than those in non-polluted samples by 25 and 55 times, the contents of arsenic and lead in the leaves of water spinach exceed the state standard of food health by 27 and 14 times, the contents of arsenic and lead in grains of paddy-rice exceed the state standard by 4 and 8 times.

The situation was even worse for human beings. In 1978, physical examinations were conducted for the plant's 843 staffs and workers and the 251 students of the Red Light School in the neighborhood of the plant. Of the staffs and workers, 38 percent suffered illness of the respiratory tract, 61 percent suffered illness of the five sense organs, 89 percent had aleukia and 32 percent aleukocytosis. Of the students, 62 percent suffered pharyngitis, and 52 percent suffered ophthalmia.

Why didn't the First Smelting Plant try to prevent this serious pollution situation? Not that they didn't want to, but that they had no money. The voice of complaint among the masses became increasingly louder, and the plant's cadres and workers were even more impatient. The workers said: "Even the steel machinery and equipment couldn't stand the corrosion, we are only human beings!" When your reporter went to the plant for investigation, he stood before the blast furnace for only 5 minutes, and could not catch his breath from choking. But how many times 5 minutes must the workers stay at their posts before the furnace?

Since 1974 the plant has made plans for the comprehensive use of sulfur dioxide and submitted them to the higher authorities. People from the higher level did come several times and promise to resolve the problem. However, when the plant sent up its plans, the higher authority said that there was no money. These plans require only 5 million yuan to recover 70 percent of the sulfur dioxide. Moreover, the plant did not ask for state investment, only planned to make loans from banks which would be repaid totally within 2 years. Even on such conditions, no permission was granted. The masses said angrily: "It's just like 'having money to buy coffins but no money to cure the disease!'"

Is there really no money? We can calculate the following accounts:

First, as the smoky gas of sulfur dioxide will do harm to the growth of crops, every year the plant must close down for 2 months during the season when the paddy-rice begins flowering. Though 1 month is spent for making major repairs, the other month of suspension of production is a total loss to the plant. According to the calculation that each month the plant produces 3,000 tons of crude copper at the value of 4,850 yuan per ton, every year there is a loss of more than 14 million yuan in output value.

Secondly, in making 30,000 tons of crude copper, only a small portion of the sulfur dioxide produced is recovered, while 72,000 tons of it is discharged in exhaust every year. This amount of sulfur dioxide gas can be turned into about 120,000 tons of sulfuric acid, at the value of 120 yuan per ton. The plant must forego more than 14 million yuan every year.

It seems ridiculous. The most ideal plan submitted by the plant is also a plan to recover all the sulfur dioxide, requiring an investment of only a little over 20 million yuan. If the state had appropriated this money to the plant, the foregoing yearly losses on the two accounts would have been avoided. Besides, the capital could be recovered totally within 2 years, the plant would be able to give a large sum of profit to the state in the third year. Furthermore, it would be much more beneficial to both the physical health of the people and the normal growth of the crops.

Even so, if the plant's plan of "5 million" yuan were carried out, at present the plant would have turned out every year about 30,000 tons of sulfuric acid from sulfur dioxide recovered. From this 30,000 tons of sulfuric acid, the plant could receive 2.4 million yuan in profit. According to the stipulation in the central authority's document on the comprehensive use by all enterprises that "profits from products will not be surrendered to the state before 1985 and are to be retained by the departments, localities and enterprises for the further use of treating the 'three wastes,' improving the environment and improving the working conditions of the staffs and workers," the First Smelting Plant could use this money to totally repay the loan in 2 years. From the third year, the plant could make great profits. Besides, when the plan is put into force, the plant can recover 70 percent of sulfur dioxide to turn out more than 90,000 tons of sulfuric acid, at the output value of 10.8 million yuan. This would be so great an achievement, why don't we do it?

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PEOPLE'S REPUBLIC OF CHINA

BRIEFS

GUANGZHOU ENVIRONMENTAL PROTECTION--Recently, the Guangzhou Municipal Environmental Protection Office issued circulars to 46 enterprises and units in the municipality. The circulars demanded that they adopt immediate measures to eliminate smoke and dust. If this is not done, these units will be strictly dealt with, warned, criticized, fined, made to pay compensation or forced to suspend their operations. After receiving the circulars, some factories set up leadership groups to eliminate smoke and dust and to actively handle the problem. [HK240856 Guangzhou Guangdong Provincial Service in Mandarin 2330 GMT 22 Jan 80 HK]

SEA POLLUTION REDUCTION--Beijing, January 29--China has reduced industrial pollution in Bohai Bay and the Yellow Sea on the east China coast over the last two years, according to the environmental protection office of the State Council. Chromium, cadmium, lead and copper in the local sea waters are below the level permitted in fishing waters. Scores of pollution control projects have been built on the east coast and eight new stations to purify oily water have been built at the oilfields there. Five refineries are now able to clean their oily water to about 80 per cent purity instead of 30 per cent as in the past. In addition to the installation of pollution control devices, many factories have carried out technical innovations aimed at cutting down the use of inimical heavy metals. Equipment has been installed at Dalian, Qingdao and other east coast harbours to clean dirty water and other waste discharged from vessels. [Text] [Beijing XINHUA in English 0245 GMT 29 Jan 80 OW]

CSO: 5000



THAILAND

BRIEFS

EARTHQUAKES IN NORTH--Light earthquakes shook parts of the northern province of Chiang Mai on Monday [11 February], the weather bureau reported. It said the quakes were measured at four on the Richter scale. No damage was reported. [Text] [BK130117 Bangkok NATION REVIEW in English 13 Feb 80 p 3 BK]

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## INTERNATIONAL AFFAIRS

### BRIEFS

HUNGARY-ROMANIA WATER CONSERVANCY PROTOCOL--Budapest, February 5 (MTI)--  
The 10th session of the Hungarian-Romanian Water Conservancy Joint Commission ended in Budapest on Tuesday with the signing of a protocol. At the talks the Hungarian delegation was led by Jozsef Vincze, vice-president of the National Water Conservancy Office, the Romanian delegation by Ioan Badea, vice-president of the Romanian National Council for Water Management. The water conservancy specialists of the two countries surveyed the water management works done last year on the border waters. They stated that the condition of the flood prevention and inland waters prevention works is satisfactory on the mutual interest areas of both sides, and the maintenance works are also continuous. The hydrometeorological cooperation which serves the efficiency of flood prevention is to be expanded by a new agreement: Beginning in the summer of this year, on an experimental basis, they will begin the information exchange of the meteorological radar-stations. At the session they held talks on harmonizing the long-range plans and on the protection against water pollution. [Text] [LD052318 Budapest MTI in English 1736 GMT 5 Feb 80 LD]

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POLAND

BRIEFS

ENVIRONMENTAL PROTECTION OUTLAYS--Outlays in billions of zlotys for environmental protection include the following: 1966-70--15 planned, 10.745 utilized; 1971-75--34 planned, 22.13 utilized; 1976-80--55 planned, 38.774 utilized. [Excerpt] [Warsaw PERSPEKTYWY in Polish No 4, 25 Jan 80 p 11]

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## INTER-AMERICAN AFFAIRS

### URUGUAYAN-ARGENTINE WATERWAYS GROUP PLANS POLLUTION CENTERS

Montevideo EL PAIS in Spanish 17 Jan 80 p 9

[Text] The head of Uruguay's delegation to the Uruguayan-Argentine Waterways Board welcomed the Secretary of the Intergovernmental Maritime Consultative Organization (IMCO) of New Delhi, Mr. Srivastava, in a ceremony held yesterday.

Rear Admiral Francisco Sangurro said:

"We welcome the Secretary General of the Intergovernmental Maritime Consultative Organization.

"In the name of the Navy General Command and in my role as president of the Uruguayan delegation to the Uruguayan-Argentine Waterways Board and president of the Navy General Command's Committee for Protection of the Marine Environment I express our thanks for your most welcome visit to us.

"Uruguay is a nation which is reaping the fruit of a strenuous effort toward national recovery, which we believe in firmly, and your friendly presence helps us toward our goal.

"Mr. Secretary, we are aware of the broad scope of your organization's work and of its various committees, including such important matters as 'Ocean Lifesaving' and 'Safe Navigating.' We consider especially valuable the effective labor of the 'Environmental Protection Committee.'

"In brief, we understand the importance and the complexity of your office. But also we are aware of the generous effort, ability and especially the cordiality and great spirit of cooperativeness characterizing your efforts and consequently the great privilege conferred by a visit from yourself.

"During this meeting you are to receive a document which reveals the exemplary relations of brotherhood and cooperation between two nations, the testimony of the favorable reception and support given to a draft treaty on cooperation to combat marine pollution by the Technical Committee of the Uruguayan-Argentine Waterways Board.

"The purpose of the draft treaty is to contribute to the preservation and efficient use of living resources and to the protection of the environment in the maritime zone which is common to both nations, which we refer to as the "New Sea."

"In this manner you will participate in a ceremony commemorating an action which is a model for cooperation between two nations.

"We are concerned about our work and committed to it.

"We hope our problems will be understood.

"With your permission, I shall explain briefly what the Technical Committee of the Waterways Board is. It is a binational juridical organization involving Uruguay and Argentina in fulfillment of terms of the Plata River Waterways Treaty.

"The scope of its action is the common Uruguayan-Argentine maritime area. It is a political forum for analysis of concerns common to the two nations regarding this waterway. Also because of its work it is an important technical organization; among other projects I will note the studies and planning carried out toward the conservation, preservation and rational development of living resources and the protection of the marine environment. Also it plans to set limits on the catch of each species and the share to be allocated to each of the parties.

"Therefore it will be obvious that this committee has an important task if the two nations are to develop marine wealth properly and grow in cooperation regarding scientific, technical and economic planning.

"As the Secretary knows, our Navy has shown special interest in marine pollution problems, especially involving hydrocarbons and other harmful substances, and has therefore sponsored and promoted a draft treaty with Argentina 'on cooperation to combat marine pollution' in fulfillment of what was written in the aforementioned Treaty, building on the recommendations from IMCO and its 'Environmental Protection Committee.' So we have seen the importance IMCO has for Uruguay, reflected in the efforts of our Marine Environment Protection Committee, which I am honored to chair, and in the active participation of the Uruguayan delegation to IMCO. 'If you know your seas well, you will better defend your land'; with this motto our Navy seeks complete understanding of our seas with the intention of guarding them, protecting them and administering their resources efficiently.

"As the result of a motion by the Uruguayan delegation the Technical Committee has supported this plan, in keeping with the resolution adopted in the plenary session of 13 December 1979.

"Copies of this resolution and the corresponding proposal will now be presented to the Secretary.



"However, we realize that our work does not end here. We look forward to subsequent phases, which will allow for fulfillment of two very real needs: the installation of a center for antipollution activities in the waterways and a center for training and education toward combating pollution. These programs will give us an active capacity toward protecting the marine environment. We believe we are interpreting correctly the intentions of the Technical Committee of the Waterways Board in saying that bringing these programs to reality is definitely a priority.

"Lastly, Mr Secretary, as we thank you again for your visit and your cordial spirit of cooperation, we intend to give the most serious consideration to suggestions on how to reach our goal.

"Your presence among us gives us new encouragement to pursue this goal.

"Mr Secretary, when you leave Uruguay, we hope you will remember us as people who have made plans, fulfilled them, and who will continue to do the same."

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**FIRE DESTROYS MORE THAN 700 HECTARES OF FOREST**

Montevideo EL PAIS in Spanish 17 Jan 80 p 10

[Text] More than 700 hectares were affected by a raging fire which broke out during the night of 15 January in the Jaureguiberry resort 80 kilometers from Montevideo on the Inter-Resort Highway.

The fire started a few minutes after 2000 hours on Tuesday 15 January and burned until 0500 hours yesterday. Early yesterday afternoon blazes broke out again and a large part of the resort was destroyed. Units of the National Firefighting Service returned to the scene and worked until the early morning of 17 January in an intensive effort which they said would have to continue through the afternoon.

Laboring on the scene were more than 50 firefighting units from four stations, Cuartel Centenario and detachments from Solymar and Parque del Plata.

Yesterday afternoon firefighters from the national naval prefecture, the army, the police and local government as well as private citizens joined the effort and worked ceaselessly to keep the flames from reaching populated areas.

The fire extended from Kilometer 73 of the Inter-Resort Highway to Kilometer 79 and affected about 700 hectares of hilly ground covered with pines and eucalyptus, causing alarm among residents of the area.

Fortunately there were no casualties and no dwellings were burned.

Late last night Cuartel Centenario officials told EL PAIS that there were about 15 sizable hot spots in the overall region affected and that each of them was separated from the rest by 1 or 2 kilometers.

It is assumed that the firefighters would be putting out the blaze all day today. Once again we must remind people that it is dangerous to burn paper or garbage in such areas or throw cigarette butts from their vehicles when going through these areas of the nation.

## SISIANI RIVER POLLUTED AT ELDORET, TURBO

Nairobi DAILY NATION in English 29 Jan 80 p 8

[Text] Eldoret Municipal officials declined to comment on a recent NATION report attributed to Kakamega police that thousands of fish and marine creatures in River Sisiani, which passes through Eldoret and Turbo areas, were dying from pollution caused by an unknown factory at Eldoret.

Town Clerk J.R. Asambo, told the NATION that he was unable to comment on the report because it was a delicate issue. He said the town's engineer and chief public health officer had inspected the river but they too could not make a statement. Officials of local factories in Eldoret also declined to comment.

The town engineer, Mr. Musazi, who was present during

the interview, said only the Water Development Ministry had the necessary expertise to ascertain the cause of marine deaths in the river, adding that he had been assured by Eldoret water officer that a pollution expert from Nairobi would soon visit the area to investigate.

Asked if any of the local factories were responsible for the pollution, Mr. Musazi said it was difficult to pinpoint any particular factory.

Meanwhile, reports from Turbo say that thousands of dead fish

and other marine creatures were floating on the river.

Commenting on an open lagoon outside Rift Valley Textile Factory (Rivatex), the town engineer said it had been treated and, as such, he did not see how it could be a threat to marine life. His department had also built a separate sewage for the factory, he said.

The walls of the lagoon at Rivatex had burst and water from it was flowing into the river, the NATION found out. But the town engineer said Rivatex no

longer used its ponds, including the lagoon, because a separate sewage had replaced them.

## EFFORTS MADE TO AID DROUGHT-STRICKEN FARMERS

### Agricultural Union Meeting

Windhoek THE WINDHOEK ADVERTISER in English 13 Feb 80 p 3

[Article by Anne Marie du Preez]

[Text]

The SWA Agricultural Union will be holding a meeting in the hall at the showgrounds in Otjiwarongo on February 19 at 9 am.

The purpose of the meeting is to discuss possible aid to drought-stricken farmers in the north.

Mr Botha Joubert of the SWAAU told The Advertiser that he has just returned from a trip to Outjo and that the situation there didn't look at all good.

"It is terribly dry and the people are beginning to suffer financially", he said.

The meeting will be for all those needing help, as well as for the people able to supply aid to the farmers.

The chairman of the meeting will be Mr Andries Pretorius, president of

SWAAU, who will also represent the Meat Board.

Also represented will be Agricultural Technical Services who will stand in for Agricultural Economy and Marketing, Agricultural Credit and Land-Tenure Group 30 of the Defence Force in Otjiwarongo, Damara Meat Packers and Karoo, BKB, Landbank and various Commercial Banks.

The agricultural districts that have been invited to attend are Outjo, Otjiwarongo, Tsumeb, Grootfontein and Omaruru. Each of the District Agricultural Unions may send two representatives.

From the meeting it should become clear whether the farmers can expect any help and to what extent it will improve their present situation.

## Emergency Grazing Sought

Windhoek THE WINDHOEK ADVERTISER in English 13 Feb 80 p 3

[Text]

Drought conditions in the Kamanjab area have reached serious proportions and Mr J W Burger, Secretary of the Kamanjab Farmer's Association, has appealed for a second time to farmers in the north to come forward if they have emergency grazing facilities available.

According to Mr Burger up to 150 head of cattle have died as a result of the drought on one farm and he said that if there was no imminent aid forthcoming to drought stricken farmers in this area they would be facing utter disaster.

This area had a good rainfall for the last time about four years ago and farmers have reached the stage where they have to feed their stock in kraals.

Last week a similar appeal was made and the SWA Landbank came up with an offer of two farms for emergency graz-

ing one near Tsamab and the other near Ojjiwarongo.

Mr Burger said that two farmers who were suffering most from the effects of the drought were given the chance to use the farms, with an option of hiring for grazing. There are however still numerous other farmers who are in desperate need of alternate grazing.

The possibility of approaching the Government for an emergency grazing area (like the Mangetti bloc of former days) had already been discussed.

Bushmanland was thought to be a possible area for this purpose, but it was not known (at this stage) if there was any noteworthy grazing or available water.

Anyone who might be able to help these Kamanjab farmers are asked to contact Mr Burger at Kamanjab 1511, or Mr Labuschagne at Kamanjab 1702.

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# DROUGHT SAID STILL WIDESPREAD DESPITE SOME RAINFALL

Windhoek THE WINDHOEK ADVERTISER in English 20 Feb 80 p 3

[Article by Annatjie van Rensburg]

[Text]

THE widespread rain that the Territory has enjoyed since the weekend has had little effect on the water levels of dams, according to an official of the Department of Water Affairs.

Kalkfeld however has had good rain since Friday, showers ranging from 11 mm to 80 mm, the latest figure being 8 mm. Most farm dams in the area are almost full and rivers were flowing to such an extent that traffic was held up at one stage.

Loose thundershowers have fallen over Keetmanshoop.

Farms in the district have had 20 mm, but only 12 mm was measured in the town itself.

Although it brought relief after one of the hottest days for several years, it is still dry in most parts.

Farmers have already begun to feed their cattle.

No inflow of water into the Naute Dam has been reported which is now only 39 percent full as opposed to 58 percent at the same time last year.

The drought is still severe in the district of Gochas.

Many farmers are now feeding sheep with maize. Animals must be given large quantities of salt licks in order to preserve fair condition.

All waterholes at Gochas have dried up. One of the biggest waterholes, at the farm Nu-Aub, has been reduced to a puddle. The water level of boreholes has dropped so drastically that some farmers are having them drilled deeper.

At Epupa in the west farmers measured up to 80 mm and in the east 57 mm on Sunday. In the Waterberg and Otjivuso reserve, cattle are dying in large numbers. This has led to cattle auctions in these two reserves being cancelled.

Although up to 20 mm was measured in parts of Kamanjab district, the drought will only be ended if it continues to rain for at least a week. Only 7 mm was measured in Kamanjab on Monday.

Windhoek had 8 mm rain on Monday, Usakos 7,5 mm and Otavi 5 mm.

The levels of the Hardap and Von Bach dams are more than 20 percent lower than at the same time last year.

**LAGOS INDUSTRIAL WASTE DIVISION ESTABLISHED**

Lagos DAILY TIMES in English 4 Feb 80 p 24

[Text] The industrial waste collection division of the Lagos State Waste Disposal Board was launched at a brief ceremony at their headquarters, Iddo Works Yard, Ijora, at the weekend.

The chairman of the board, Alhaji Abayomi Mumuni, who launched the scheme, said that the state government had made it mandatory for all industries, commercial houses, offices, manufacturing concerns to use the services of the state's Waste Disposal Board which is now the only government agency mandated to charge, collect and dispose of waste in the state.

He stated that the establishment of this division was brought about as a result of astronomical increase of indiscriminate dumping of industrial waste along the expressways and undeveloped vacant sites.

In order to combat this, a survey was carried out and it was proved beyond all doubts that industrial and manufacturing concerns top the list of those responsible for the heaps of waste dumps.

It was then recommended that the state government should come to the aid of the industries by providing an organised and efficient collection system from the source which will eradicate the incidence of indiscriminate dumping and thereby give room for better environmental protection.

Alhaji Mumuni announced that state government had provided a substantial grant for the purchase of equipment and vehicles needed for the scheme to succeed, and to this end the board could not afford to fail.

He advised the officials and operators of the division to be hard-working, diligent in their approach and above all be businesslike, adding that commercial houses were in business for profit, and would certainly appreciate good services.

Alhaji Mumuni warned that the board would not tolerate any indiscipline from any quarters and that any operator found to be dishonest or indolent in the discharge of his duties would be given the boot.

He urged all industries, commercial houses and manufacturing concerns to cooperate with the board.

"If any waste from any industry is dumped along the highway, any vehicle used in this connection will be impounded and will be released on payment of the prescribed fee for such an offence," he declared.

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**RHODESIA**

**BRIEFS**

**FARMERS ACT ON DROUGHT--**The Commercial Farmers' Union is so concerned about the drought that has hit farmers hard in some parts of the country, it has arranged for a nationwide survey to be carried out by Thursday. The CPU will then analyse the results to get an accurate, up-to-date picture of the current situation. [Text] [Salisbury THE HERALD in English 22 Feb 80 p 5]

CSO: 5000

## BRIEFS

**RAIN SHORTAGE**--Inadequate rainfall is threatening the success of the "lima" programme in some parts of Southern Province, especially Kalomo, provincial member of the Central Committee, Mr Mungoni Liso, has said. Commenting on the progress of the programme, Mr Liso expressed fears for some areas like in Kalomo, where he said crops had died in the past few weeks because of insufficient rainfall. "Unless there is more rain soon, more crops will die and the lima programme will be adversely affected," he said. Mr Liso said people in the province were determined to ensure the success of the programme. Meanwhile, farmers in Kalomo have appealed to church leaders, chiefs and village headmen in the district to pray for rains in order to save crops. They said if there was insufficient rain in the coming few weeks, many crops would die and farmers would not be able to repay their seasonal loans to the Agricultural Finance Company. They warned of a possible food crisis in the area as a result of poor rainfall. Calling on church leaders, chiefs and village headmen to pray for rains, one of the farmers, Mr Petrol Siantungwani of Dimbwe village in Chief Sipatunyana's area, said if it was not for the drought, Southern Province would have had a bumper maize harvest this season. [Text]  
[Lusaka TIMES OF ZAMBIA in English 6 Feb 80 p 5]

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**ALL-UNION CONFERENCE ON ENVIRONMENT HELD IN MINSK**

**Moscow VESTNIK VYSSHEY SHKOLY in Russian No 10, Oct 79 pp 35-37**

[Article by I. V. Vorob'yev, USSR Minister of VUZ's: "Education in the Area of Environmental Protection"]

[Text] Because of the unfavorable changes in the environment that accompany the scientific and technical revolution there is an increasingly persistent need to explain to the broad population the goals of the protection of nature as a complex problem, to include subjects pertaining to this problem in the training process at various levels of education, to increase the skills of specialists in this area and to train personnel who, in their specific practical activity, can apply the knowledge that is acquired for utilization of natural wealth, its protection and restoration.

The party and government display constant concern for the protection of nature and efficient utilization of natural resources. The creation of a favorable environment in the natural and social sense is one of the goals of our society's development. The USSR Constitution, legislative documents of the USSR Supreme Soviet and a number of decrees of the CPSU Central Committee and the USSR Council of Ministers reflect specific measures that contribute to protecting nature and utilizing it thriftily.

Education in the protection of nature is a new area of activity to which an especially large amount of attention has been devoted recently both in our country and abroad. Comprising an integral part of the overall content of education, education in the protection of nature has as its goal the solution of a number of practical problems.

In the middle of this year in Minsk there was the First All-Union Conference on Education in the Area of Environmental Protection which was organized by a special section of the Interdepartmental Scientific and Technical Council for Comprehensive Problems of Protection of the Environment and Efficient Utilization of Natural Resources under the USSR State Committee for Science and Technology, the ministries of VUZ's of the USSR and the Belorussian SSR and the academies of sciences of the USSR and the Belorussian SSR. Also participating in the work of the conference were representa-

ives of the USSR State Committee for Vocational and Technical Education and representatives of union ministries of education, culture, agriculture, public health, land reclamation and water management, and internal affairs, the USSR State Committee for Forestry, the USSR State Committee for Television and Radio Broadcasting and State Committee for Cinematography, agencies for the state administrations of union republics, the USSR Academy of Pedagogical Sciences, the All-Union "Znaniye" Society, the All-Union Council of Scientific and Technical Societies, republic societies for the protection of nature, and also scientists and specialists of various profiles --more than 200 people.

N. S. Yegorov, Deputy Minister of Higher and Secondary Socialized Education, who opened the conference, emphasized that in our country unremitting attention is devoted to problems of protection of nature and education in this area. In his welcoming address to participants in the Tbilisi Intergovernmental Conference on Education in the Area of Environmental Protection (1977), General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev noted that to cultivate a thrifty and attentive attitude toward the environment and to increase knowledge and skills necessary for its protection and improvement should become an indispensable part of the overall system of enlightenment, education and training of personnel.

A report on the activity of the section for education in the area of environmental protection was given by its scientific secretary, L. K. Shaposhnikov. Information about the international UNESCO program concerning this problem was presented by the first secretary of the Secretariat of the USSR Commission for UNESCO Affairs, V. P. Artem'yev. V. P. Andriyeshin, the representative of the CEMA Secretariat, discussed the course of the implementation of the "Overall Developed Program for Cooperation of the CEMA Countries and Yugoslavia During the Period up to 1980 in the Area of Protection and Improvement of the Environment and the Related Efficient Utilization of Natural Resources."

A paper devoted to problems of further improvement of higher and secondary specialized education in this area was presented by the USSR Deputy Minister of Higher and Secondary Specialized Education, N. S. Yegorov. He emphasized that educating people, primarily specialists, in a correct, scientifically substantiated approach to problems of the environment, arming them with new knowledge about the interrelations between man and nature, and instilling in them feelings of responsibility for their behavior with respect to it play a large role in solving problems of efficient control of the environment, its protection and restoration.

The speaker noted that by now the VUZ's have arranged a system of training of specialists for the national economy who are educated in the spirit of a thrifty attitude toward nature and who have mastered methods and technology for its protection. At the basis of this system lie ideas about the environment (the natural environment and the one created by man) as a uni-

fied whole, and about education in this area—as continuous, interdisciplinary, integrated in the determination of the general tasks and differentiated from the point of view of occupational orientation.

The kind of personnel training we are discussing is now being carried out in 238 VUZ's for 20 specialties—in keeping with the national economy's long-range need for them. The recently established specialties and specializations include: "recovering and utilizing dusts and gases," "efficient utilization of water resources and decontamination of industrial waste waters," "agricultural water supply, irrigation and protection of water resources," "utilization of gas and fuel oil and protection of the air basin," and others. In 1978 the VUZ's graduated 39,500 specialists in this area (11.6 percent more than in 1975). Their numbers will increase significantly.

But the national economy also needs personnel who can comprehensively consider and solve environmental protection problems. In this area the USSR Ministry of VUZ's places great hopes in the special faculties that have been created at VUZ's. For example, regarding the problem "ecology and increased efficiency of the utilization of natural resources," these faculties have been opened at six VUZ's for people with a higher education: at the Leningrad, Rostov, and Belorussian Universities, Moscow and Leningrad Mining Institutes and the Leningrad Technological Institute for the Pulp and Paper Industry.

The speaker went on to note that at the present time the educational system is solving qualitatively new problems in the area under consideration. Specialists directly involved in effecting the natural environment are now not only given propaganda about the ideas of environmental protection, efficient utilization of natural resources and means of protecting natural objects, but they are also taught about control of the environment and its planning. Training is also being modified for specialists who are to master methods of technical-economic and legal analysis of the influence of production and its constituent parts on the ecological system, restoration of disturbed environment and modeling of waste-free and low-waste technology, planning and operation of ecologically closed enterprises, utilization or recuperation of wastes and intermediate products, and so forth.

But the creation of technologies that can be successfully included in the system of exchange of substances in nature also requires a higher level of biological knowledge on the part of the corresponding specialist—knowledge pertaining to natural cycles of the exchange of substances, that is, the fundamentals of ecology and the science of biogeocenosis.

Acting on the idea of continuous and interdisciplinary training and utilizing the experiences of a number of VUZ's, particularly the Leningrad Technological Institute of the Pulp and Paper Industry, the USSR Ministry of VUZ's has begun to develop comprehensive plans for continuous ecological



training of students in each specialty. These plans will establish the overall volume of knowledge in the area of protection of nature for each specialty and will assign subjects and sections on problems of environmental protection to the various disciplines of the standard training plan.

Under the Eleventh Five-Year Plan it is intended to increase the output of training literature regarding the corresponding problems.

In conclusion, N. S. Yegorov stated that the USSR Ministry of VUZ's attaches a great deal of importance to various kinds of public activity related to propaganda of ideas of environmental protection and will contribute to their further improvement and dissemination.

Detailed reports were given at plenary meetings by the academician-secretary of the division of didactic and particular methodologies of the USSR Academy of Pedagogical Sciences, I. E. Zverev; the deputy chairman of the USSR State Committee for Vocational and Technical Education, P. D. Selivanov; the USSR deputy minister of culture, Ye. M. Chekharin; the chief of the administration for personnel training institutions of the USSR State Committee for Hydrometeorology and Control of the Environment, K. A. Khzmalyan; the chief of the Main Administration of Higher and Secondary Agricultural Education of the USSR Ministry of Agriculture, I. P. Makarov; the chief of the Main Administration of Educational Institutions of the USSR Ministry of Public Health, Yu. F. Isakov; and deputy chairman of the USSR State Committee for Forestry, L. Ye. Mikhaylov.

The activity of the USSR Academy of Sciences in this area of education was elucidated in a paper by the deputy chief scientific secretary of the Presidium of the USSR Academy of Sciences, academician A. V. Fokin. He emphasized that great amount of importance that is attached to the development of research toward working out scientific fundamentals of efficient regulation of the interrelations between man and the environment. This subject is being included ever more extensively in plans of various academic institutes, the Siberian Branch of the USSR Academy of Sciences and regional scientific centers. Moreover the solution of scientific problems is combined with explanation of the principles and methods of protection of nature, and it is intended to increase the qualifications of scientists in this area. In particular, there should be further development of research which has as its goal to evaluate the condition of environmental protection education in the USSR and abroad and, on the basis of this, the preparation of suggestions for its improvement at various levels of education and in various spheres of production activity.

A. V. Fokin expressed the idea that the time has come for scientists to think about developing and submitting to management agencies a draft of a USSR normative document concerning education in the area of environmental protection which would reveal the tasks, forms and basic methods of education for the protection of nature as a complex system developed in terms of all levels of education and all kinds of improvement of the qualifications of representatives of various branches of the national economy.

It was noted that there is a need to augment the list of specialties of scientific workers so as to include in the divisions of biological, geological, agricultural, pedagogical and philosophical sciences an additional specialty called "efficient utilization of natural resources and the protection of nature" (analogous to what has been done in the division called "geographical sciences")--in order to prepare and defend works in this specialty for candidates' and doctoral degrees.

The report entitled "The UNESCO Program 'Man and Biosphere' and Its Educational Aspects" was presented by the chairman of the Soviet committee for this program, academician V. Ye. Sokolov. A special decision concerning the beginning of research in this series (MAB) was made at the 16th General UNESCO Conference in 1970. By now national committees of MAB have been organized in 87 countries. The Soviet committee was formed in 1975 and national committees have been created in the majority of union republics.

V. Ye. Sokolov discussed briefly the areas of research on fourteen MAB problems in the USSR. The aforementioned international UNESCO program began to be implemented in 1975 and the USSR is participating actively in this.

A paper on the subject "Scientific and Technical Information on Environmental Protection" was presented by the head of the division for environmental protection of the All-Union Institute of Scientific and Technical Information, A. N. Gratsianskiy. Deputy chairman of the board of the "Znaniye" Society, A. P. Vladislavlev, devoted his paper to the participation of the All-Union "Znaniye" Society in environmental protection education. The deputy chairman of the presidium of the central council of the All-Russian Society for the Protection of Nature, I. F. Barishpol, discussed the activity of republic societies for the protection of nature. Papers from representatives of union republics were also heard.

There were three sections at the conference: "higher and secondary specialized education, personnel training and improvement of qualification of specialists," "preschool and school and occupational-technical education, improving qualifications of teachers and educators," and "propaganda of environmental protection, the activity of public organizations and means of mass information." In the sections papers were discussed, statements were heard from scientists and specialists and ways of expanding international contacts were earmarked.

At the concluding plenary meeting recommendations were adopted for ministries, state committees, departments, training institutions, scientific institutions and public organizations who are responsible for further development of education in the area of environmental protection and efficient utilization of natural resources. The recommendations emphasized that the goal of this education is to inculcate knowledge, skills and abilities that are necessary for constructive participation in the protec-

tion and improvement of the environment and in ensuring efficient utilization of natural resources. It was noted at the conference that in our country there are great possibilities for the development of environmental protection education and for imbuing members of society with feelings of high responsibility for the condition of natural riches.

The following recommendations, in particular, were addressed to the USSR Ministry of VUZ's: to step up control over the implementation of those orders that prescribe measures for improving the training process and scientific research in the area of education on problems of environmental protection; to establish for all VUZ's for the 1980/81 training year a system of sequential training of students in the area of protection and utilization of natural resources; and to develop the fundamental provisions for a standard program.

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# CONTROL OF AIR POLLUTION SEEN AS LARGE ENVIRONMENTAL PROBLEM

Tashkent KOMMUNIST UZBEKISTANA in Russian No 10, Oct 79 pp 51-58

[Article by E. Zolotarev, candidate of geographical sciences, V. Sokovnin, candidate of technical sciences, and R. Burtman: "Regional Aspects of the Problem of Environmental Protection"]

[Text] The modern scientific and technical revolution, accompanied by rapid growth of industry, agricultural production and transportation, inevitably leads to increased utilization of natural resources and exerts a strong influence on the environment--the vegetable and animal world, the condition of the earth's interior, the soil and the air and water basins. According to figures that are far from complete, on our planet now we annually displace 2-3 trillion tons of rock, ground and soil, we burn more than 2.5 billion tons of petroleum and 2 billion tons of coal and there are hundreds of millions of automobiles, airplanes, tractors and other machines with internal combustion engines in operation. An immense quantity of mineral fertilizers and toxic chemicals are applied in agriculture. While processing raw materials, industry discharges hundreds of millions of tons of gaseous and solid pollutants into the atmosphere.

This kind of effect on nature, naturally, leads to a disturbance of the dynamic equilibrium in the biosphere. In the majority of cases nature's possibilities of reproducing its resources still exceed man's industrial needs, but these possibilities are not limitless.

The scientific and technical revolution, which has accelerated the all-around improvement of the individual and urbanization, and increasingly forces people to live in artificial surroundings, a "technologized" environment, and a number of other objective processes taking place in modern productive forces cause the man of an industrially developed society to have a strongly expressed need for an environment which will not only correspond to his biological essence, but will also satisfy his recreational (related to rest and the use of free time) and also aesthetic demands and will meet his natural desire to live in harmony with nature.

It is important to note that up to a certain time the negative consequences of man's production activity affected individual objects and components

of nature and this period was accompanied by a policy for the protection of nature in which attention was concentrated on protecting rare species of the animal and vegetable world and preservation (conservation) of elements of pristine nature; but in the present ecological situation, man himself, his health and well-being have become the focus of the various unfavorable consequences of intervention in nature. As a result of this the traditional problem of protection of nature has grown into a much broader problem of protecting man's environment.

This problem is global and it involves the interests of all countries. But the existence of two socioeconomic formations on the planet brings us two approaches to it, and it should be considered to be inseparably connected to the nature of production and social relations, that is, in its social aspect. The ideological and theoretical polemics concerning ecology which have merged into the overall course of the ideological struggle between socialism and capitalism penetrates deeply into international relations and the activity of organizations that are called upon to provide for cooperation among states in the area of the protection of nature and the reproduction of natural resources.

In countries where capitalist production relations prevail the process of overcoming the contradictions between society and nature take place in an imperfect, frequently extremely distorted form, and are accompanied by a sharp deterioration of the ecological situation and mass disturbance of natural productive forces. Representatives of the bourgeoisie blame the real symptoms of the ecological crisis on industrial development in general and, from this position, they try to prove the irreconcilability of the contradictions between scientific-technical progress and nature. But it is precisely in the highly developed capitalist states that the scientific and technical revolution is accompanied by increased injurious exploitation of natural resources, which are private property there. The tendency toward planning of measures for the protection of nature is impeded in these states by narrowly selfish interests pursued by monopolies in the struggle for spheres for capital investments, sales markets and sources of raw material.

Obtaining immense profits, capitalists are not interested in allotting funds for measures for environmental protection. But under strong social pressure, attempts have been undertaken in a number of capitalist countries to reduce the level of pollution of the environment which, in a number of cases, are producing positive results. But the objective social conditions of the capitalist world impede effective measures for the protection of nature.

Even K. Marx and F. Engels came to the conclusion that the optimal interaction between human society and nature stands in contradiction to the nature of the establishment and development of capitalism and this interaction can not take place under those conditions. At the same time, in their opinion, this interaction should become the norm for a socialist

society which intelligently constructs its material and spiritual world. Having an essential advantage over capitalism in matters of the utilization of nature, it creates better prerequisites for solving ecological problems. In a socialist society all natural riches are national property and this fact generates completely new forms and dimensions for implementing tasks for the protection of nature. The concern for restoring and multiplying natural wealth ensues from the very essence of the socialist social system.

General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev said: "the Soviet Union is doing everything possible for the protection of nature, its vegetable and animal world, and its mineral resources. Lenin bequeathed this to us. His signature stands under more than 100 documents concerning the protection of nature which were adopted in the first years of soviet power. This course was again confirmed by our party's 25th Congress. We shall adhere to this line in the future." ("Leninskim Kursom Rechi, privetstviya, stat'i, vospominaniya" [On a Leninist Course. Speeches, Greetings, Articles and Reminiscences], Vol 7, Moscow, Politizdat, 1979, p 332).

The social and economic advantages of the socialist system provide favorable possibilities for our country to accelerate scientific and technical progress without harming the environment. The "Main Directions for the Development of the USSR National Economy in 1976-1980" adopted by the 25th CPSU Congress, envision a system of measures which are directed toward a comprehensive solution to the problems of efficient utilization of nature. In particular, in addition to intensive assimilation of natural resources, there is increased control over the condition of the environment and sources of its pollution. In order to reduce the harmful effects of wastes on the environment, new effective means of working deposits of minerals will be sought and progressive technological processes for their extraction, enrichment and processing will be introduced. "Among the directions of scientific and technical progress that play a special role under the Tenth Five-Year Plan and determine the prospects for the long-term development of the economy," it was noted at the 25th CPSU Congress, "one can single out . . . the development of progressive, less complicated technology (for example, metallurgy without furnaces, spindleless spinning and shuttleless weaving) and technology that saves the maximum amount of initial raw material, fuel and process materials and provides for protection of the environment . . ." ("Materialy XXV s'yezda KPSS" [Materials of the 25th CPSU Congress] Moscow, Politizdat, 1976, pp 126-127).

Earmarking measures for a comprehensive, efficient utilization and protection of natural resources, the party and government point out the need to improve methods of predicting the effects of production on the environment. Possible consequences of these effects must be taken into account when preparing and adopting planning decisions. At the present time the State Committee of the USSR Council of Ministers for Science and Technology, in conjunction with the USSR Academy of Sciences, republic academies of sciences and other departments, is developing scientific and technical predictions of probable changes in the biosphere as a result of the develop-

ment of the country's national economy in the next 20-30 years. An inter-departmental scientific and technical council for complex problems of environmental protection and efficient utilization of natural resources has been organized as part of the State Committee of the USSR Council of Ministers for Science and Technology. The council is responsible for coordinating and solving large state problems in this area. It includes leading scientists and specialists of various sciences as well as state and public activists.

A council for problems of the biosphere has been created in the USSR Academy of Sciences. Its functions is to combine the efforts and provide methodological leadership for the activity of many scientific institutions that are working on the fundamentals of efficient utilization and protection of natural resources. A similar council has been organized as part of the Uzbek SSR Academy of Sciences.

In keeping with the decree of the CPSU Central Committee and the USSR Council of Ministers of 29 December 1972, "on stepping up the protection of nature and improving the utilization of natural resources," the state plan for the development of the national economy for 1975 included for the first time an independent section entitled "protection of nature and efficient utilization of natural resources," which contains assignments for the protection of the water and air basins and timber resources, and envisions the startup of new purification installations, the introduction of various dust catchers, and so forth. Since that time sections like these have been worked out for each year. Control over the fulfillment of legislative requirements concerning environmental protection is also increasing.

At the 25th CPSU Congress Comrade L. I. Brezhnev said: ". . . as the national economy develops and cities and industrial centers grow, more and more money will be required for environmental protection--under the current five-year plan alone 11 billion rubles are being allotted for these purposes. And this sum will increase." Thus the state plan for the country's economic and social development in 1979 almost 2 billion rubles were allotted for environmental protection measures in the national economy as a whole, including 70.7 million rubles in the Uzbek SSR. Moreover, significant capital investments have been allotted for improving technological processes so as to reduce pollution of the environment significantly.

The immense significance our state attaches to a thrifty attitude toward nature, efficient utilization of its riches and increased responsibility on the part of soviet citizens for the condition of the environment are shown by the fact that five articles of the new USSR Constitution adopted in 1977 refer to the protection of nature and articles 18 and 67 are fully devoted to this subject. This shows the concern for the interests of present and future generations of people who constitute the socialist society.

The Soviet Union's successes in providing for protection of the natural environment are generally known. In terms of purity of the air and water,



Moscow, for example, is ahead of all cities of the world that are comparable in industrial potential and many industrial centers of our country are exemplary from this standpoint.

The system of environmental protection and reproduction of natural resources that has been formed in the USSR in the modern stage is called upon to contribute to solving programmed socioeconomic tasks set by the communist party: the construction of a material and technical base for communism and steady improvement in the standard of living for the Soviet people. These tasks require accelerated development of productive forces and expansion of production by drawing into economic circulation more and more natural resources and assimilating virgin territories. This intensive process is accompanied by appreciable pollution of the environment, primarily the air and water basins. There is also a severe threat to man's environment from the increased volumes of construction and municipal-household wastes. Therefore there is now a need to draw up a comprehensive plan for the development of productive forces in combination with plans for efficient utilization of nature and environmental protection.

In the Uzbek SSR the system for protection and reproduction of nature can become efficient if it is differentiated into regional subsystems that take into account the specific features of individual natural and economic regions--Tashkent-Chirchik, Angren-Almalyk, Fergana, the Golodnaya Steppe, Karshi, the lower Amu-Darya and others. Of course one can not expect to create such a system in the near future. But it is clear that this can be done in stages, taking into account the complexity of the tasks and the large amounts of material expenditures.

First of all the republic must conduct scientific research and practical work for preventing further pollution of the environment and bringing its parameters up to a condition whereby the concentration of harmful substances does not exceed the maximally permissible level. To do this it is necessary to create a system for accounting for, gathering and processing information concerning the condition of natural resources, to determine the need for capital investments for ecological purposes and to develop methods for evaluating their effectiveness. Industrial enterprises based on old technology should be equipped with effective purification installations and new enterprises that are being started up should, as a rule, be based on technology that uses little or no water and a closed cycle, and industries that are harmful to man should be moved outside of areas that have housing construction. At existing water-intensive, energy-intensive and metal-intensive enterprises it is necessary to search out technological and other reserves for reducing proportional expenditures of water, raw material and fuel. Thus the restoration and protection of the environment should be transformed into a special branch that is equal to other national economic branches.

On the other hand the broader sphere of production activity--the utilization of nature as a whole which is under the jurisdiction of the economic

and departmental system of control--also needs improvement. In particular, it is necessary to orient production toward obtaining the optimal ecological-economic effect as well. This can be achieved by a gradual change-over from technologies based on the purification of harmful discharges and waste waters in the final stage of production to technologies that preclude the very appearance of pollutants of the environment (closed cycles, recycling of water and so forth). Wastes that appear after this kind of production should either be rendered completely harmless to nature and man or fully utilized.

In other words it is necessary to reach a point where economic activity not only does not violate the circulation of substances in the biosphere, but even models it to some degree, that is, an important task for the forthcoming period is the increasing development of a complex of industries that utilizes raw material as completely and efficiently as possible and utilizes all production wastes as fully as possible. This brings about a need for the development of regional schemes for the utilization of nature in terms of individual territorial-production complexes of Uzbekistan, which reflect the basis of the development of a complex of branches that is ecologically correct and economically justified from the point of view of the republic's national economic tasks, in which the total amount of discharges of harmful substances into the environment does not exceed the permissible norm. The introduction into energy and household management (especially in rural regions of the republic) of installations that use solar and wind energy would also contribute to reducing the discharge of harmful substances into the atmosphere.

When speaking of the state of affairs with respect to the protection of nature in Uzbekistan it is necessary to emphasize the regional peculiarity as compared to many other territories of our country. This consists in a high concentration of population and production, both agricultural and industrial, on a relatively small irrigated part of the republic's territory. It is precisely here that processes which are most dangerous from the point of view of effecting the environment are manifested. They are brought about by chemization and the negative factor of economic and domestic activity. Moreover, everything indicates that this situation will continue to exist in the foreseeable future.

What has been said determines the need to solve, on the one hand, the problem of protecting land and water resources and the atmosphere from pollution with waste from industry and domestic activity on a relatively limited but intensively assimilated territory and, on the other, to solve new problems of efficient transformation of nature on the remaining immense territory of desert, mountains and foothills. Both these tasks are crucial for Uzbekistan since they themselves are directly related to the stable growth of the republic's population and its increasing economic potential.

What with the rapid development of individual industries in the near future there can possibly be both an absolute increase in the quantity of harmful discharges into the environment and an increase in their proportion as compared to the permissible norm on a limited territory. Therefore even now



in the majority of territorial-production complexes TPK, in order to retain the interaction among individual elements of the biosphere it is necessary to create gas and water purification installations that meet modern requirements. And regions (TPK's) with complex ecological situations should be put into a separate category. It is possible to include new industries in these TPK's and to increase the capacities of existing ones only if we have and can equip them with the latest technical equipment and technology. Questions of coordinating the development of TPK's with the ecological situation should be resolved by ministries and main boards that have jurisdiction over enterprises of a given TPK on the territory in conjunction with planning and controlling organizations. Soviets of people's deputies should also have a great deal to say here since, according to the new USSR Constitution it is their duty to coordinate and control the activity of enterprises, institutions and organizations in the area of the protection of nature.

In order to solve correctly the problems of development of productive forces of individual TPK's it is necessary, in our opinion, to develop methods for evaluating the possible consequences of the effects of discharges from polluting industries on the environment and for predicting their overall quantities in the near and distant future. It is also necessary to develop a strategy for regional planning of environmental protection measures with a determination of their economic effectiveness and their sequence. This work is especially important for many territorial-production complexes of Uzbekistan--Angren-Almalyk, the lower Amu-Darya, Fergana and others, that is, for those regions which are distinguished by the most intensive development of productive forces and by their effect on the environment both at present and in the future. Each of these regions is distinguished by the specific way it utilizes nature. Thus while in the Fergana valley the problem of preventing pollution of the hydrosphere and biosphere with toxic chemicals and fertilizers is very crucial because of their intensive utilization in agricultural, for the Angren-Almalyk mining and industrial region the most crucial problem is preventing pollution of the environment with discharges from the Almalyk mining and metallurgical combine, the Angrenskaya GRES and other industrial enterprises, and for the lower reaches of the Amu-Darya the foremost problem is that of degradation of natural conditions and resources and the corresponding economic and social consequences resulting from the drying up of the Aral Sea.

Efficient utilization of nature and protection of the environment from pollution are thus primarily regional problems, that is, problems which can be solved successfully only with a comprehensive, total territorial approach to the objects being studied, whether they be individual branches of industry or the basic natural environments--the atmosphere, hydrosphere or biosphere.

Protection of the environment is not only an important social task, but also a serious factor in increasing the efficiency of public production. Pollution of the atmosphere, water sources and soil leads to a reduction

in labor productivity and the out-capital ratio in the national economy, thus requiring additional expenditures to ensure the necessary qualitative level of the products that are produced and, finally, it reduces the social effective from the funds invested in the development of the nonproductive sphere--public health, municipal and communal services, and so forth. The economic harm from environmental pollution arises as a result of the increased amount of disease among the population, the fact that fixed production capital and citizens' private property wear out more rapidly, and the decreased productivity of land, water and forest resources.

Consequently, expenditures on protecting the environment from pollution should be evaluated not only from the point of view of the social return, but also from the position of the economic advantage they produce. Thus activity for protecting nature becomes an appreciable factor in increasing the effectiveness of socialist production, as a result of which its socio-political significance increases.

Science and technical progress help to solve successfully the problem of protecting the environment from pollution. Thus for the first time in world practice the Uzbek combine for refractory and heat-resistant metals has developed and is applying a method which makes it possible to burn all harmful industrial discharges with minimal expenditures (in the flame of a gas burner). Purification of waste waters is exceptionally inexpensive by means of their "gasification" and subsequent floatation with air cavities. This was applied for the first time in Povolzh'ye. One's hopes are raised extremely by such methods as desalination of land with a constant electric current (electric amelioration) and cultivation of the soil by means of ultrasonic sound.

The examples that have been given show that the task of more complete utilization of natural resources and their protection is most closely related to the latest scientific and technical achievements. Therefore this task must be carried out through the joint efforts of scientific and planning organizations and production collectives, under a planned policy, with specific firm assignments in annual, five-year and long-term plans and predictions.

Because of the limited nature of scientific forces and material possibilities, prognostications concerning the protection of nature could apparently be carried out most expediently in the initial stages in terms of the most important areas for Uzbekistan. One should include among them, first of all, predictions of changes in the qualitative composition of land and water resources and the atmosphere. This will contribute to more efficient utilization of the riches of nature and to optimization of the processes of the mutual influences of nature and our republic's national economy.

Methods of controlling the purity of the natural environment, which are adequate to the social and ecological conditions and capabilities of developed socialism, are being introduced into practice. In the broad sense they include the following: determination of the future normatives for the

purity of the environment for the planning period and region (territory) under consideration and the selection of the optimal strategy for their achievement (prediction and planning of the level of purity of the environment, scientific-technical and resource support for measures for its protection from pollution); and improvement of social mechanisms for protecting the environment from pollution (organization-legal, economic and cultural-educational).

Education should play a large role in the matter of protecting nature. People born in our day who are made aware of the fundamentals of science in schools, tekhnikums and higher educational institutions are already people of the future, of the 21st century, a century which will be marked by an even more rapid upsurge of technical progress, a century of unprecedented flourishing of the possibilities of human genius. And man of the 21st century will be faced with an even more critical task of protecting and improving the nature that surrounds him, skillfully and intelligently utilizing its gifts, and creating an efficient system for consuming its resources, especially irreplaceable ones.

Therefore it is necessary, even in our days, to create a system of ecological education and to educate the younger generation, the generation of builders of a communist society, in the spirit of a thrifty and loving attitude toward nature and in the spirit of wise and careful expenditure of its riches. "To transform our country into a blossoming garden so that man can enjoy the beauty of nature at work, at home, everywhere and anywhere and so that the forces of nature are completely placed in the service of man,"--this is the appeal made by I. V. Michurin in his time. These words retain their immediate significance even today.

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'IZVESTIYA' REPORTS EFFECTS OF 'SEVERE' CYCLONE ON SAKHALIN

LD250955 Moscow IZVESTIYA in Russian 20 Jan 80 Morning Edition p 6 LD

[Report by A. Pushkar: "Cyclone Over Sakhalin"]

[Text] Yuzhno-Sakhalinsk—For several days now a cyclone which hurtled with tremendous speed from Japan's southern seaboard has been raging over Sakhalin and the oblast's other islands.

It has caused gales of up to 40 meters a second and heavy snowfalls. The Tym River Valley is covered with snowdrifts 1.5 meters deep. There have been particularly heavy snowfalls in Yuzhno-Sakhalinsk, Dolinsk and other regions in the southern part of the island. Telephone lines and tree branches have collapsed under the weight of the snow. The windows of houses have jammed. The sidewalks have been blocked and people are walking along the passable section of the streets along white trenches opened up by bulldozers and scrapers. In the past few days only a few aircraft have been able to get through from the mainland to the island's airport during the brief periods of lull.

"Weather forecasters warned us of the cyclone's approach and we were expecting it, but we did not expect it to be so severe or prolonged," I was told by V. Babichev, deputy chairman of the Sakhalinskiy Oblispolkom, who heads the staff to combat natural disasters. "Feed stocks were laid in in advance in livestock units. The city and rayon staffs are working round the clock, resolving various problems connected with the heavy frosts."

The cyclone has not disrupted the rhythm of life in the oblast. Thanks to the selfless work of snow plow crews the railroad is operating. Passenger and freight runs have been canceled on particularly dangerous places on the coast. But the main motor routes are operating uninterruptedly.

A report arrived from the Korsakovskiy Sovkhoz: A bus carrying workers had got stuck. A cross-country vehicle was immediately dispatched to render assistance. Equipment belonging not only to the highways

department but also to other departments is now operating on the streets in the oblast center and other cities and settlements. Hundreds of bulldozers, graders, scrapers and rotors are fighting the snow.

Enterprises, stores, schools and kindergartens are operating. People have proved to be stronger than this unusually powerful cyclone.

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DENMARK

BURIED CHEMICAL WASTE, DDT THREATEN COPENHAGEN WATER SUPPLY

Copenhagen BERLINGSKE TIDENDE in Danish 25 Jan 80 p 1

[Text] The pollution through poisonous substances of the subsoil a few hundred meters from the borings at Ballerup of the Copenhagen Water Supply Authority will slowly spread to the drinking water borings if no measures are taken. As a precaution, the three nearest borings have already been closed.

This alarm signal, which has been given early enough to prevent accidents, was yesterday given by Minister for the Environment Ivar Nergaard in a statement to the committee on the environment of the Folketing. Against the background of an article in BERLINGSKE 2 years ago, the committee had asked for an account of the investigations into the pollution at the former location of the chemical plant of Cheminova at Ballerup, the area around the Lyfa factory.

In the years up to 1953, Cheminova, like many other enterprises at the time, disposed of its chemical waste by burying it in the ground surrounding the factory.

Only later on did the authorities become aware of the danger of pollution of the subsoil water. It is particularly unfortunate in this case as the area is only approximately 200 meters from the catchment area at Kildedal of the Copenhagen Water Supply Authority.

After an initial alarm in the fall of 1977, a steering committee was set up to head an investigation. It is composed of representatives from the Ballerup municipal authority, the Environmental Protection Agency, the Copenhagen Water Supply Authority, the Civil Defense Board, the Government Institute for Chemical Control of Pesticides, Cheminova, and Lyfa.



## Poisons Halfway Down

The work of the group so far shows:

The buried barrels containing chemical waste products have corroded, and the contents has leaked out. Forty chemical waste products have been identified. Down to a depth of 8 meters, the residues of the toxic substances of DDT and bladon [parathion insecticide] have been traced. Down to a depth of 20 meters, phenol compounds are found. No poisonous substances have penetrated to the subsoil water at a depth of 40-45 meters, which the Copenhagen Water Supply Authority utilizes.

As a precaution, the three nearest borings have, nevertheless, been closed, and there are thus 350 meters to the nearest boring. In addition, part of the pumped-up water is conducted through aquaria containing fish that are particularly sensitive to poisonous substances. The final comment by the minister, nevertheless, is decisive:

"The movement of the subsoil water in the area takes place from the polluted area toward the catchment area of the Copenhagen Water Supply Authority at Kildedal. The polluted upper layer of subsoil water will, in time, reach down to the lower subsoil water layer and cause its pollution to a gradually increasing degree, unless measures are taken to prevent the pollution.

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# WATER AUTHORITY TO TRY TO EXTRACT POISONS

Copenhagen BERLINGSKE TIDENDE in Danish 26 Jan 80 p 2

[Article by Øjvind Kyre]

[Text] 'Anti-pollution borings' will probably be undertaken on the premises of the Lyfa enterprise at Ballerup where Cheminova 27 years ago buried barrels containing such poisonous substances as DDT, bladan [a parathion insecticide] and phenol. The poisonous substances now threaten to close the Kildeplads Waterworks which supplies drinking water to Copenhagen unless early measures are taken.

'Anti-pollution borings' which will extract the percolated poisonous substances is the most realistic method of the possibilities which are being discussed at the moment by a steering committee which includes technicians from the Environmental Protection Agency, the Copenhagen Water Supply Authority, and the Ballerup Municipal Authority.

"By undertaking five anti-pollution borings between the waterworks and the barrels containing the poisonous substances, which have become completely corroded, we shall be able to extract the poisons and, at the same time, prevent them from spreading," Knud Th. Kreyer, sectional engineer of the Copenhagen Water Supply Authority states. "We are worried about the situation, and that is why effective measures will have to be taken."

## 350 Meters to Storage Place for Poisons

This solution will cost 200,000 kroner. Other, but more costly, methods to stop the percolation of the poisonous substances are to turn the whole area upside down, or to place a plastic film over the entire area to prevent any further percolation. The working group will decide, in a month's time, which of the methods will be employed.

When the barrels containing the poisonous substances buried by Cheminova were discovered more than 2 years ago, the Copenhagen Water Supply Authority immediately closed three of the nearest borings for water. Now there are only 350 meters from the nearest one of the remaining 12 borings to the place where the poisons were stored.

Forty-one aquarium fish will be the guarantee to the Copenhagen residents that no polluted water will be supplied to the consumers. Water from the borings runs constantly through two aquaria containing very sensitive fish. If the fish die, the waterworks will be closed immediately.

#### Phenol 20 Meters Down

Many tests have been undertaken on the land on which Lyfa is located which show that phenol is present to a depth of 20 meters and bladon [parathion insecticide] and DDT to a depth of 8 meters.

The question who will be held liable for damages in connection with the pollution has still not been decided upon. The lampware factory of Lyfa, which purchased the factory without knowing that Cheminova had buried its poisons in the ground, has itself had heavy costs. "We had an extra expense of 200,000 kroner when, 2 years ago, we expanded the factory and, during the digging for the foundations, we encountered the unpleasantly smelling poisonous substances," Steen Nerret, director, Lyfa-Fog & Mørup says.

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**TRADE UNION ROLE IN ENVIRONMENTAL MATTERS EXAMINED**

Frankfurt/Main FRANKFURTER RUNDSCHAU in German 2 Feb 80 p 17

[Excerpts from article by Christian Goetz: "We Were There Before the Greens; 'Secure Jobs Under Blue Skies'/German Trade Union Federation and Environmental Policy/Many Citizens Awakened"]

[Excerpts] Citizens' action groups and the Greens have taken on added importance in the 1980 Bundestag election year. The political parties are attempting to find out how it happened that a "green movement" came to be established in addition to the parties. The chief finding is that, after all, environmental policy is ultimately in better hands with existing party groupings than with the new, alternative groups. The German Trade Union Federation (DGB) shares this view. We present an article by Christian Goetz entitled "Secure Jobs Under Blue Skies," which was published in "Werden 79," a yearbook for the German trade unions.

**DGB Must Pursue an 'Active Environmental Policy'**

Scarcely a day goes by now without reports in the local press, regional newspapers and other media on questions concerning dangers to and protection of the environment. This is a clear reflection of the fact that many citizens have awakened. They are resisting when they see fish dying in the rivers, forests being cut down and cities turned into wastelands of concrete. They are demanding that the sky actually be blue -- no one laughs anymore about Willy Brandt's old appeal of many years ago -- and that green fields and recreation areas be made easily accessible.

The negative ecological trend could soon become irreversible in vital areas unless resolute steps are taken now to counter the trend. More and more citizens are grasping this fact -- or at least suspect it. They have been coached in environmental sensitivity by numerous citizens' action groups which -- above and beyond party lines or any other boundaries -- have been organizing concrete resistance to threats to the environment, often with very imaginative campaigns. The environmentalists can no

longer be ignored by any politician, with the latter being forced at least to pay lip service to their demands.

How long will they be able to maintain the "new awareness" of an active minority of the population regarding environmental problems this time? This question has nothing to do with painting a gloomy picture. It is justified if one remembers that only 10 years ago there was the same kind of public "awareness push" concerning ecological necessities.

Environmental policy was given decisive impetus with formation of the social-liberal coalition in 1969. The Brandt/Scheel cabinet put together a comprehensive environmental program that can with hindsight definitely qualify as a "big deal" -- particularly when measured by the standard of present government policy. Nor did it stop with declarations of intent. Beginning in 1970, the SPD/FDP government in Bonn endeavored with a tight network of laws and ordinances to gain control over air and water pollution or uncontrolled rubbish dumps. And these efforts met with considerable success initially. Passed during this positive phase were the laws on leaded gasoline, detergents and refuse removal and the federal law on emission protection. All these regulations have meanwhile proven their effectiveness many times over.

This positive phase came to an abrupt end with the oil crisis. The prophets of growth dominated the field once again during the second half of the 1970's, relegating environmental policy to obscurity. They were responsible for the ruination of laws such as that on water taxes -- weakened to the point of inefficacy -- or the law on protection of wildlife and forests, which was dictated largely by agricultural interest groups rather than ecologists.

The machinery surrounding the law on foodstuffs has remained virtually unused, and even the first draft of the noise pollution law fell far short of judicial decisions (won by those harmed by noise pollution). According to details that have come out so far, the planned law on environmental chemicals (called for by the giants of the chemical industry) contains so many clauses on exceptions that its inefficacy is preprogrammed. The DGB Executive Board noted in this connection in a statement on 11 April 1979 that "with this draft, the federal government has essentially failed to commit the chemical industry to the general public interest in terms of health and environmental protection."

In the narrower sense, environmental policy is classed with reform policy, but Bonn switched its emphasis some time ago, calling a halt to reforms. Thus, ecological demands have only the slightest of chances.

#### Trade Unions Were There Before the 'Greens'

Perhaps the overall situation would look more favorable if the trade unions had pursued a more consistent policy in recent years in the field



of ecology. They are certainly predestined for this -- and doubtless obligated as well.

This is because environmental problems are indeed not new, especially for the trade unions. They have had to deal with these problems virtually from the time the unions were established. The focus was on efforts to protect against threats to working and living conditions for workers and their families resulting from industrialization. But also with reference to the more recent situation, namely the past few years, the trade unions did not hold back in their ecology policies -- at least insofar as their programs were concerned -- they did not wait for citizens' action groups and "Green candidate slates" to publicize environmental concerns.

Thus, as early as 29 May 1972, the DGB Executive Board issued "Environmental Protection Guidelines of the German Trade Union Federation." The basic union position is described introductorily as follows: "The German Trade Union Federation views the increasing pollution and poisoning of the environment with great concern. Union work is not confined to settling matters of wages and other working conditions. On the contrary, the German trade unions have always assumed a policymaking responsibility which they intend to exercise also within the framework of environmental protection... . The DGB considers the right to a decent environment as a basic social right which ranks equally with health, education, social security or appropriate housing and humane urban planning. It is the responsibility of a modern social state to see that a decent environment is assured. On the basis of historical experience, the DGB presupposes that an infrangible connection exists between a humane work environment, a humane society and decent natural surroundings... ."

#### Environmental Protection Less a Technological Responsibility Than One of Social Policy

The DGB program recognizes and unequivocally emphasizes that environmental policy represents not only a "technological responsibility." It is rather a question of social policy, of suppressing "strong economic and social interests."

The DGB made the following demands in this context in 1972:

1. Comprehensive "environmental statistics" -- a kind of universal environmental balance sheet which would clarify the interrelationships and the dependency between man and the environment;
2. Specific "cost/benefit analyses" for harmful production procedures, products and materials, thus permitting an analysis and accounting in each case of both the causes and costs of environmental pollution;
3. Development of "test data" -- including that which can be applied under the law -- for environmental pollution;



4. Immediate and comprehensive reporting to the public on the level of environmental pollution;
5. Reinforcement of responsible control authorities in terms of materials and personnel;
6. Consistent application of the originator principle and responsibility of the producer;
7. Possible introduction of a specific tax;
8. On-the-job living conditions conducive to a healthy environment;
9. Public planning of environmental protection and its effective public control;
10. Adoption of the demand for "ecological equilibrium" in the "catalog of economic objectives," which heretofore has included full employment, price stability and foreign economic equilibrium.

In its "guidelines," the DGB emphatically rejects the view that measures and investments designed to protect the environment generally cause a decline in growth. On the contrary, uncontrolled economic growth works in some crucial points against the interests of wage earners.

In September 1972, the DGB Executive Board and Federal Committee issued unanimous demands ("test cases") in anticipation of the upcoming Bundestag elections. "Test case" No 8, entitled "Environmental Protection," contained detailed demands on this set of issues.

#### Prevailing Economic Principle Contributes to Environmental Crisis

Then on 6 March 1974, the DGB Federal Committee published another "DGB Environmental Program."

The introductory theses emphasize that wage earners are affected in special measure by damage to the environment. Consequently: "They have not only a vital interest, but furthermore an economic interest as well, in persistent and radical measures designed to protect the environment."

Thesis 17 stresses once again that the trade unions reject the choice between secure jobs or a clean environment: "The assurance of jobs, accompanied by total or partial shutdowns attributed to or motivated by environmental policies, would place the wage earner in the position of looking out for his own as well as general environmental interests without fear for his job. It would thus be essentially instrumental in causing the wage earner to become active in environmental politics."

It is unrealistic and, moreover, unfair to expect environmental involvement on the part of wage earners if they thereby jeopardize their jobs at the same time. This is not being taken into account adequately by many citizens' action groups, which nevertheless sometimes complain about a lack of cooperation and support.

Going beyond the "guidelines" of 1972, the DGB made the following demands in its program published barely 2 years later:

Transference to federal jurisdiction of the competing legislative responsibilities on matters of environmental protection;

Appointment of executive-level "environmental protection officers" in all business enterprises whose production is harmful to the environment (these officers would be responsible to civil and criminal authority);

Establishment of a "chair for accident prevention, health protection and environmental protection" at vocational schools.

The DGB presented additional detailed proposals on the important problem areas of noise and odor pollution, refuse removal, the water balance and landscape planning.

#### **Environmental Protection Also a European Responsibility**

At the regularly scheduled 11th DGB Congress held in Hamburg from 21 to 26 May 1978, petition No 32 on "environmental protection policy" was passed unanimously. It contains essentially no new demands. The DGB additionally underscores the necessity of harmonizing environmental legislation within the European Community and calls once again for participation by the trade unions in all political decisionmaking processes having to do with protection of the environment.

This brief outline shows that the DGB and its unions are not lacking in theories with respect to dangers to and protection of the environment. There is no shortage of insights, programs and clear political demands. The unions need borrow nothing from citizens' action groups and "Green slates."

Nevertheless, the DGB as a whole must be clearly criticized for having done too little to put its environmental programs before the political public, or at least before the broad spectrum of its membership. Furthermore, virtually nothing has been done to mobilize the organization men and the wage earners toward implementing the demands. This has been the result of too great a proximity to Bonn (in this field, too). Once the Schmidt/Genscher government put reform policy on the back burner, the DGB apparently prescribed restraint for itself. The result is such a marked lack of practical application that the programs themselves have largely

been forgotten. Experience has shown that demands exclusively on paper have only a limited existence.

#### Exert Pressure on Responsible Politicians

It is important that the DGB and its unions recall their overall well-developed (still "modern" and up-to-date) programs of demands dating from 1972 and 1974 and that they step up their pursuance of an "active environmental policy" which includes the broad dissemination of information as well as mobilization.

Included here should be an examination of the "alliance question." The "Green parties" -- particularly Herbert Gruhl's "Green Action for the Future" -- are out of the question in this regard. On the other hand, cooperation could definitely be sought with a fairly sizable number of citizens' action groups -- following a process of discussion and differentiation. The important thing is that the responsible politicians be pressured to resume their reform policies with reference to environmental protection. Moreover, the trade unions must give their comprehensive support to all measures aimed at conserving energy and developing alternative energy sources; they must also make concentrated use of their own political and journalistic capacities in this direction.

To refer to the "blue skies" once again in closing: Even Helmut Schmidt was unable to pass up the chance to deprecate this appeal of Willy Brandt when he gave his sarcastic description of a Ruhr District "under whose bright blue skies the unemployed miners and steelworkers stand in line in front of the employment offices."

The wage earners have only this to say to the chancellor as well: We want secure and humane places to work under blue skies. This is not an exaggerated demand. Or in the words of Eugen Loderer: "It is not an impossible demand that politics should serve environmental protection as well as social aims."

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CSO: 5000

## STUDY PROPOSES ESKER PROTECTION PROGRAM

Helsinki UUSI SUOMI in Finnish 18 Jan 80 p 24

[Text] Punkaharju is Finland's first, and third most recent, ~~esker~~ purchase. In 1843, the Imperial Senate made a purchase after initial encouragement from an enchanted tourist—Tsar Alexander I who visited the esker and ordered prohibition of timber cutting in the area.

At the approach of the 1980's, over half of the Finnish eskers have been partially nibbled away. An esker conservation program is now being readied which recommends that over 70,000 hectares of eskers be designated for protection; the proposal is due to be completed by the summer.

Programs already exist for protection of swamps and national park areas; the most valuable protection areas have been designated.

There is no list of eskers. However, a proposal by a study group is about to be completed. The esker study group, which has worked for over 2 years and has been granted additional time twice, is intending to submit its proposal by the end of June.

Forester Veikko Marttila from the Department of Forestry states that about 140 areas have been included in the tentative list of nationally significant eskers to be preserved.

The total land area of the eskers to be preserved is according to Marttila about 70,000 hectares, that is, a little less than a tenth of the total area of the Finnish esker formations.

### Greatest Number in the North

The greatest number of the Finnish eskers is situated in southern and middle Finland, in the neighborhood of the Salpausselka eskers and in line with them. However, over half of the intended preservation targets are situated in the Oulu and Lapland provinces.

Calculated on the basis of surface areas or "cubic sand mass to be protected," the ratio is even clearer: the vast majority, even up to two-thirds of the conservation areas, are situated in northern Finland.



The largest projected conservation sites, with over 4,000 hectare areas, are situated in the north, and also the other major targets, about ten esker formations with over 1,000 hectares of surface area, are to be found in the state forests of northern and eastern Finland.

#### Two Major Areas in the South

There are only two major sites in southern Finland, and they are in the 2,500 hectare category. Otherwise the conservation projects are mostly 100 to 300 hectare areas.

About 20 conservation areas are proposed in the Province of Uusimaa, and the same amount in the Province of Häme. The fewest projects are on the southern and southwestern coasts and in Ostrobothnia.

According to Marttila, there has been an attempt to choose the eskers in such a way that they would represent "the total picture of our native country's eskerlands," i.e. include examples of the most valuable eskers and esker types.

The list is not yet ready, and negotiations with for instance the TVH [National Board of Public Roads and Waterways] are not concluded. The work group has also been waiting for the lithosphere law to progress.

#### On Department of Forestry's Lands

"The largest part of the esker reserves is located on state-owned land," Marttila explains.

According to Marttila, these are not likely to be threatened by excavation or other uses that essentially change the natural conditions.

"There were nevertheless quite a lot of options to choose from. The majority of eskers located in the Forestry Administration's land ownings have little value as sand excavation sites," Marttila notes.

#### A Third on Private Land

If we attempt to evaluate the eskers by a cubic meter or square meter, the privately owned or business-owned protection eskers will constitute about a third of the total.

If for some reason an attempt will be made to procure these land areas for the state, it will mean that requests are going to have to be made to dip into the 12 million marks that have been appropriated in the budget for buying protection areas.

#### 12 Million Marks "Nature Money"

Last year, this "nature purchase allowance" was 7 million marks, and with it, 160 hectares of national park areas, 2,000 of conservation swamps and 100 hectares of other areas were purchased.



"The land owners have been paid 700 to 1,000 marks per hectare for swamp depending on the timber and partly also on the amount of peat. The national park area, which normally has been rich with heavy timber, has been more expensive, over 10,000 marks per hectare, sometimes even over 20,000 marks, forester Marttila reveals.

The price of eskers is noticeably higher if and when also the price of the under-the-surface gravel pit is included in addition to the price of timber.

#### Median Depth over 16 Meters

The median depth of the Finnish esker formations is 6.3 meters according to a study published by the Geological Research Institute in December. At its deepest, an esker can contain 50 meters' depth of gravel and sand.

One square meter of such 50 meter deep esker costs 30 marks according to the prices used by the TVH. The above-the-surface part of the esker, that is, the growing timber, would be added to this.

#### Exploitation Bans in 40 Municipalities

Until now, excavating of the eskers and at the same time gravel hauling has been regulated to a degree through exploitation bans. An exploitation ban approved by the municipal board requires ratification by the Department of the Interior. Bans can have made possible for instance postponement of gravel hauling and timber cutting in certain esker areas.

The exploitation bans have often been effected in order to protect the communities' traditional open-air and recreation areas, or areas where ground water accumulates. Exploitation bans have been ratified for less than 40 communes.

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## NESTE'S NEW PHENOL PLANT TO ENABLE REDUCTION IN GAS LEAD

Helsinki HUFVUDSTADSBLADET in Swedish 31 Jan 80 p 10

[Article by Tora Mattheiszen]

[Text] Borga--In the future the lead in gasoline can be partially replaced with a gasoline component that Neste will start producing in Skoldvik in the Borga district. Construction of the so-called MTBE [expansion unknown] facility has already begun and should be completed by the end of this year.

The capacity of the plant will be around 80,000 tons a year according to Neste information director Pekka Vennonen. "We are talking about a component of gasoline," Vennonen said, "and it has the same function as lead, in other words it improves compression.

"This will be quite significant with regard to environmental problems although this is by no means a new discovery," said Pekka Vennonen. "There are other ways of preventing the lead in gasoline from coming out into the air with the exhaust fumes," he went on. "In the United States they use a gadget which is placed in the exhaust pipe to filter out lead residues."

### Phenol Factory Has Special Permit

Next summer work will start on another plant in Skoldvik. Then the phenol factory will be a reality. Neste has obtained a special permit from the county government and the site for the construction is ready. The phenol factory will be located alongside the benzene plant that was completed last year.

Two petrochemicals are used in manufacturing phenol, namely propane and benzene. Construction of the phenol factory is part of the company's attempt to expand its future crude oil refining operations. According to Pekka Vennonen the refinery activity itself will not increase from its current level. The emphasis will be placed on the production of more refined products. Today several different petrochemicals are

handled at the Skoldvik facilities. Among them are ethane, propane, butadiene and benzene. They are used mainly for manufacturing plastic.

#### **Will Phenol Factory Smell?**

The phenol factory has been the subject of many discussions in the Borga district. The public has been most concerned about any smell that might come from the phenol factory.

Information director Pekka Vennonen said that the company is doing everything it can to eliminate fumes and he felt people would calm down after the factory is ready. There were also misapprehensions about the benzene factory built last year, he said, but now people can see that it is not hazardous to the environment.

#### **Phenol Was Released into Water**

In the past phenol was a by-product of the process and was released into the water in small quantities, Pekka Vennonen said. There are limits to the amount that can be released into the waste water system. The phenol factory will cost 270 million marks and about half the sales will be on the domestic market, Vennonen said. Phenol is used in such products as glue.

6578

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POLLUTION CONTROL MEASURES FOR SALONICA GULF ANNOUNCED

Athens TO VINA in Greek 16 Jan 80 p 9

[Text] Salonica, 15 Jan--The year 1980 will be a year dedicated to the protection of the marine environment and especially the Salonica Gulf, according to a decision of the Central Port Authority for this second capital. Nevertheless, the filth of the Thermaikos is such that it certainly does not leave room for hopes that the situation, which is already dangerous to health, can be improved. In any case, the efforts which are being made simultaneously by three State agencies are unorganized, uncoordinated, and--in the opinion of the departmental agents themselves--lacking in continuity.

In reality the campaigns which are undertaken at various times by the responsible services, with their principle objective being to limit pollution from industrial sewage, are nothing but a "collective retreat" in the face of the great magnitude of the problem, or a transitory handling of complaints--when they are specific.

The health directorate of the Nomarchy of Salonica, the chemists of the Drainage Organization, and recently the Port Authority have all sent out their sample-takers from time to time to examine the effluents. Almost always the result is known in advance: The lengthy reports which get lost somewhere in the bureaucratic funnel, and the fines which naturally are not daunting in view of the economic resources of the industries which owe them. In short, this sporadic treatment of pollution is "wool pulled over the eyes" of the people who hope to find their seashore clean again some day and the Nymph of the Thermaikos once again unpolluted.

A characteristic example of the mutually contradictory tactics which are being followed: Recently, the Port Authority imposed fines of several thousands of drachmas on three industrial outfits, whereas a few days earlier the health directorate had stated in an official report that at two of these companies the biological purification stations were functioning normally. As for the third, specifically the industrial dye-works of Iliofin AE, the inspectors of the public health service

stated that the same situation prevailed there which had been found in previous inspections 6 months earlier, when "the effluents and sewage of the plant were being discharged with only a rudimentary treatment." A complaint was lodged against the latter industrial outfit to the public prosecutor on 27 June 1979 by this same service, whose employees do not know to this day the fate of the relevant judicial process.

The fact that there is an uncoordinated policy in the sector of dealing with the problem of the Gulf of Salonica is evident also from yesterday's announcement by Theodoros Edipidis, professor of health at the University of Salonica:

"Nobody and no other agency, aside from the Health Laboratory, has the responsibility for monitoring the pollution and the fouling of our city's gulf from sewage and effluents. The university's laboratory is officially in charge of this monitoring, and it is financed for this purpose by the Ministry of Social Services, being equipped with the most up-to-date equipment."

The Health Laboratory is the sole receiving center for official measurements of effluent samples, aside from the inspections of the drainage network which are conducted by officials of the relevant organization.

Soon, these measurements will be done in the laboratories which are now being set up under the auspices of the Council for the Protection of the Environment, which is situated in the Ministry of Northern Greece. But the lack of concrete governmental planning on this subject and the inconsistent legislation are creating regularly recurring conflicts between areas of jurisdiction and entanglements between specialists and non-specialists. A leading figure at the university stressed that the sample-takers of all the services ought to be trained at least in sampling procedures, so that they can completely carry out this specialized task.

Some of the protection measures which the Central Port Authority announced, which will begin to be implemented immediately within the second half of January, concern a regular inspecting of the Thermaikos for pollution by sewage from the coastal industries. There is also to be an intensification of the policing of ships in the area of Kalokhorion, where petroleum is unloaded, and more frequent patrols for monitoring the polluting of the sea from ships which are clearing harbor.

It has been repeatedly charged that on account of the pollution, the Thermaikos is becoming more and more lifeless. In an earlier public discussion, the public-health expert from the university had pointed out that 116,000 tons of excrement and 308,000 tons of urine are discharged into the bay of our second capital per year, while the total amount of effluents which the Thermaikos receives comes to 24,000,000 tons. This contains heavy metals and chemical substances, dyes, and detergents, which have contributed to the unconditional ban on fishing and shellfish breeding in this gulf.

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## PORTUGAL

### HEAVY DAMAGE REPORTED IN AFTERMATH OF AZORES EARTHQUAKE

#### Death Toll

Lisbon DIARIO DE NOTICIAS in Portuguese 3 Jan 80 p 9

[Excerpt] According to the latest reports reaching our newspaper, the earthquake that occurred the day before yesterday especially affecting three of the nine Azores islands--Terceira, Sao Jorge and Graciosa--caused 46 deaths (confirmed).

#### Terceira Hit Hardest

Lisbon A TARDE in Portuguese 3 Jan 80 pp 1, 8

[Excerpts] Angra do Heroismo, 3 January--"Almost half or three quarters of the buildings in Angra do Heroismo were destroyed or ruined, and some rural parishes on Terceira island suffered considerable destruction" the minister of the Republic in the Azores, Admiral Silva Horta told A TARDE. He added that "Two of these parishes were between 90 and 100 percent destroyed: Quatro Ribeiras and Doze Ribeiras. In the latter scarcely one building remained standing."

At exactly 1541 hours, an earthquake measuring 7 violently shook the central group of the Azores Islands. The strongest jolt was felt on the islands of Terceira and Sao Jorge (deaths were reported in the Topo parish) and also on Graciosa, where Luz parish suffered considerable damages.

"Fortunately this happened on a sunny afternoon and people were celebrating the holidays. Many people were not at home, otherwise the disaster would have been enormous," a quake victim told our reporter. She had lost all her possessions and, like the majority of the population, spent last night in her car.

In spite of the hour when the disaster occurred, as of yesterday evening 32 dead and nearly 100 injured, whose medical condition is under control, have been counted. There are many persons missing. The search is being conducted mainly among the debris of the houses, where it is feared some bodies may be buried.

Yesterday in Cinco Ribeiras the rescue brigades were trying to remove the body of a sexton killed by the collapse of the church towers, while he was ringing the bell in honor of a procession that was passing on the street. Just 5 minutes before the church was packed with faithful who would all have been killed.

"It is amazing that there were so few victims in view of the extent of the destruction," said Admiral Silva Horta to our newspaper. As a matter of fact, whoever walks on the streets of Angra do Heroismo and sees the desolate condition to which the city was reduced--avenues full of rubble from old buildings, collapsed houses, the entire electric (aerial) network damaged, with the wires on the ground--may wonder how it was possible that the number of victims was so small.

Last night Angra was plunged in darkness, pierced only by automobile headlights and the spectacle of a ship anchored in the port, contrasting with the city by its illumination. In Lages the generator allowed the continuation of normal life.

Some 3,000 homeless families, a total of close to 12,000 persons--Angra do Heroismo has a population of 20,000--these figures being mere provisional estimates, were reported to newsmen by the minister of transportation of the central government, Monteiro da Silva, and confirmed to A TARDE by Admiral Silva Horta.

#### Damages Close to Million Contos

Lisbon A TARDE in Portuguese 3 Jan 80 p 8

[Excerpts] Angra do Heroismo--The damages caused by the earthquake which struck the Azores Tuesday causing 32 deaths, probably add up to more than 1 billion escudos.

On the island of Terceira alone--the one most affected--there are nearly 3,000 homeless families.

To meet this emergency situation, the minister of finance ordered that an allocation of 20,000 contos be immediately placed at the disposal of an organization to be set up for that purpose.

A second order of the same minister authorizes the Banco do Portugal to present proposals of measures to be taken in the area of credit to deal with this situation.

In addition, the Ministry of Public Works has already organized teams of experts who, according to the need and in coordination with the Azores regional government, will give support to the tasks of reconstruction in restoring water supplies, repairs of communication links, reconstruction of buildings, monuments and homes.

According to the president of the Republic who returned from Azores yesterday, "material damage caused by the earthquake in some regions of the archipelago are considerable."

The chief of state said that in some cases the extent of the destruction reaches 90 percent.

#### Thirty-two Confirmed Deaths

The official death count, according to the Coordinating Center of Operations of Aid to Earthquake Victims, is 32: 28 on Terceira and 4 on Sao Jorge. Besides the 19 victims' names already released, it is impossible to give any additional names at the present time.

Although still subject to confirmation, the number of homeless families on Terceira Island is given at 3,000 while on Sao Jorge 4,000 persons are reported to be without shelter.

The situation on the island of Sao Jorge is very tragic due to bad weather.

11635

CSO: 5300

**PROFESSOR ASSERTS 20,000 LAKES IN DANGER OF 'DYING'**

Stockholm DAGENS NYHETER in Swedish 3 Feb 80 p 4

[Article by Karl Erik Lagerlof]

[Excerpt] Slowly but surely a natural catastrophe is striking at Swedish inland lakes. Some 20,000 are dying. In Bohus County and in Halland the ground water has turned out to be more affected than people suspected, with very high levels of aluminum in some places. Sweden has no battle plan for dealing with this problem.

It was not until 3 weeks ago that I fully realized what happens to the waste from my body and my kitchen drains. It was a man from Lund who explained it to me, Sven Bjork, professor of limnology, the study of fresh-water lakes and streams.

It was raining heavily in Lund. We jumped out of the car, Lars Emmelin and I, and ran into Bjork's institute which is located on the other side of Lund across the railroad tracks and quite close to the station. Time after time during our conversation I thought lightning had struck. It was the sound of trains rumbling by and shaking the limnology building. All the while I heard the sound of rain striking Sven Bjork's roof.

**Drains**

Sven Bjork extended a map of Stockholm and the surrounding area showing all the drains and sewage treatment plants. The Swedish municipal water conservation boards are among the best in the world, he stressed; the system in Stockholm is exemplary.

All drains running into lakes and streams have been capped and diverted to four different very large sewage treatment plants: Akeshov-Nockeby,

Eolshall, Henriksdal and Loudden. All the bathroom waste and kitchen dishwater from Skälby, Barkarby, Hasselby, Spanga, Vällingby, Solna and Bromma is taken to the Akeshov-Nockeby sewage treatment plant.

There are around 150 pumping stations all over Stockholm that force waste water and excrement from low-lying areas up to a better flow height for continued movement.

At the end of the 1960's we released around 7000 tons of phosphorus into our streams. Now the amount has been brought down to around 2000 tons.

But there has been no reduction in the amount of nitrogen dumped into our streams. Farming is the biggest sinner here, accounting for around two-thirds of the pollution.

#### Overfertilization

Overfertilization of lakes increases the growth of organic life in them. This requires a more extensive breakdown of organic matter. And that process requires more oxygen.

Lack of oxygen kills fish.

In addition to this is the direct discharge of oxygen-consuming organic substances. It was estimated that this amounted to 900,000 tons at the beginning of the 1960's.

This has been reduced to a discharge of about 400,000 tons of this type of material every year. Most of this comes from pulp and paper mills, although starting in the mid-1960's they have made a continuous effort to reduce lake pollution and have substantially reduced their percentage of this pollution.

From 70 to 80 percent of all the sulfur that falls over Sweden comes through the air from other countries. The Swedish reduction of sulfur discharge has been substantial but this has little effect on lakes and fields as long as no reduction is made in the discharge from the big industrial centers on the continent.

#### Acidification

The sulfur deposit lowers the pH value of the lakes. This is called acidification.

A pH value of 5.5-5.0 is the lowest level tolerated by most water fauna.

In the winter of 1973 the pH level of all the lakes in northern Alvsborg County, which includes all of Dalsland, was measured. Half of the total 1704 lakes had a pH level of 5.5 or lower.



These figures and those above on pH values are taken from "Environment and Environmental Protection in Sweden," a report to OECD from the Environmental Protection Board and the state Conservation Board.



Soil susceptibility to acids. Gray areas indicate susceptible soils. Diagonal lines indicate very susceptible soils and black areas are extremely susceptible.

Every year 25-50 tons of mercury falls on Sweden in rain and snow. Normally mercury is volatile and is taken up into the air again after it descends. But if it falls in a lake with a low pH value it is no longer volatile. Acid lakes are mercury "traps." The mercury concentrates in them.

In the 1979 yearbook of the Conservation Board Jan Nilsson wrote:

"Unless drastic steps are taken the acidification of our lakes will continue. Already now 20,000 lakes probably have a critically low pH level in connection with the melting of winter snow."

Fish die in polluted lakes partly from lack of oxygen (due to the discharge of oxygen-consuming organic substances), partly from acidification and partly from the release of things like aluminum as a result of the low pH levels. Jan Nilsson wrote concerning this:

"Much of the water reaching our lakes passes through the soil first. There are large quantities of aluminum in the soil, bound in various ways. When the pH of the soil and along with it the pH of the water in the ground declines the aluminum leaches out and can be carried along with the water down into the ground water or into lakes. In solution aluminum acts as an acid and is a strongly contributing factor to the death of fish in polluted lakes. At certain pH levels (4.3-6) aluminum exists in a chemical form that causes enlarged gills."

#### Recovery?

Well, you might say, many overfertilized lakes recover on their own--mainly through having an adequate current flow--after the discharge into them stops.

But sulfur fallout is not stopping. And when enough sulfur has fallen to reduce the pH level of "renewed" lakes sufficiently old deposits that were bound in sediment at the bottom can be released and become dangerous again. Jan Nilsson mentioned aluminum. Another example is mercury. A low pH not only makes a lake more likely to absorb and retain mercury falling from above--it also releases old mercury deposits already in the environment.

"Is that correct?" we asked the limnology professor in the vibrating house by the railway station in Lund while the rain fell noisily on his roof. He told us it was.

#### No Plan

Is there any plan, some strategy worked out at the central level to save Sweden's lakes?

"No," Bjork said, "unfortunately there is no plan. There are funds for liming and for other measures. Alert communities who want to revive their lakes can seek funds from the state and usually the money is approved. But the authorities do not take any of the initiative in this. This means that ecological efforts in this area are very uneven."

There is a good deal of pessimism with regard to the prospects of negotiating a reduction of sulfur emissions in other countries. If this pessimism is justified "medical" steps are the only solution for at least 20 years into the future.

There are two main illnesses that need to be remedied: 1) overfertilization leading to lack of oxygen and fish deaths (primarily a surplus of phosphorus) and 2) acidification from sulfur fallout resulting in a pH below 5.5 and fish deaths.

#### Lakes Unique

"Lakes are individuals," Bjork emphasized. "One cannot restore a lake to the same condition it had before. When a lake dies a system of relationships among different kinds of organisms dies with it. Restoring a functioning ecosystem is not so hard if the ingredients don't matter. But the difficult thing about the large-scale change in the water which occurs through acidification and general exploitation is that so many unique organisms disappear.

"Since the Ice Age our lakes have been quite isolated and specially-adapted strains of various organisms have often developed in them and when all this is rubbed out by the giant eraser of acidification it is gone forever. This is happening here too, probably on a very large scale.

"Very little is known about this," Bjork went on. "We haven't really had the resources to do anything in this area. We simply don't know how much has been lost--aside from some unique types of fish that were observed because they taste good or could be sold, certain kinds of char and salmon."

"So when they say a lake has been revived it is an extremely relative restoration?" I asked.

"Yes."

"How is that done?"

#### Trummen

We received a long and interesting reply to that question. Trummen Lake in Vaxjo was overfertilized and had not revived after discharges into it

were stopped in 1958. In the summers of 1970 and 1971 a layer of black and nutritious layer of sludge plus 30 cm of a sublayer of brown sludge were pumped out. Then they removed the reeds and water-lily vegetation from the lake. This removed the nutrition and vegetation that had choked the lake and deprived it of oxygen and the city of Vaxjo which had thought it might be necessary to fill in the lake and make a landfill out of it could delight in the shining waters in the summertime and in ice-skating there in the wintertime.

"Trummen was quite a shallow lake. It improved from becoming deeper. But our actions there were quite crude. There are now methods of treating sediment in lakes in a way that makes it 'nutrient-retaining.'"

"What do you do?" Lars Emmelin asked. "Do you oxidate the surface or..."

"A kind of harrow is driven along the bottom of the lake, injecting an oxidation agent, and this must be something that is not harmful to nature and won't kill organisms, etc. The substance used is calcium nitrate which continues to work for a long period of time. Thus it is not the explosive kind of process resulting from hydrogen peroxide, for example."

Locked In

"Then instead of removing the sediment you put a lock on it?" Emmelin asked.

"Exactly," Bjork said. "The substances are locked into the lake so they don't circulate."

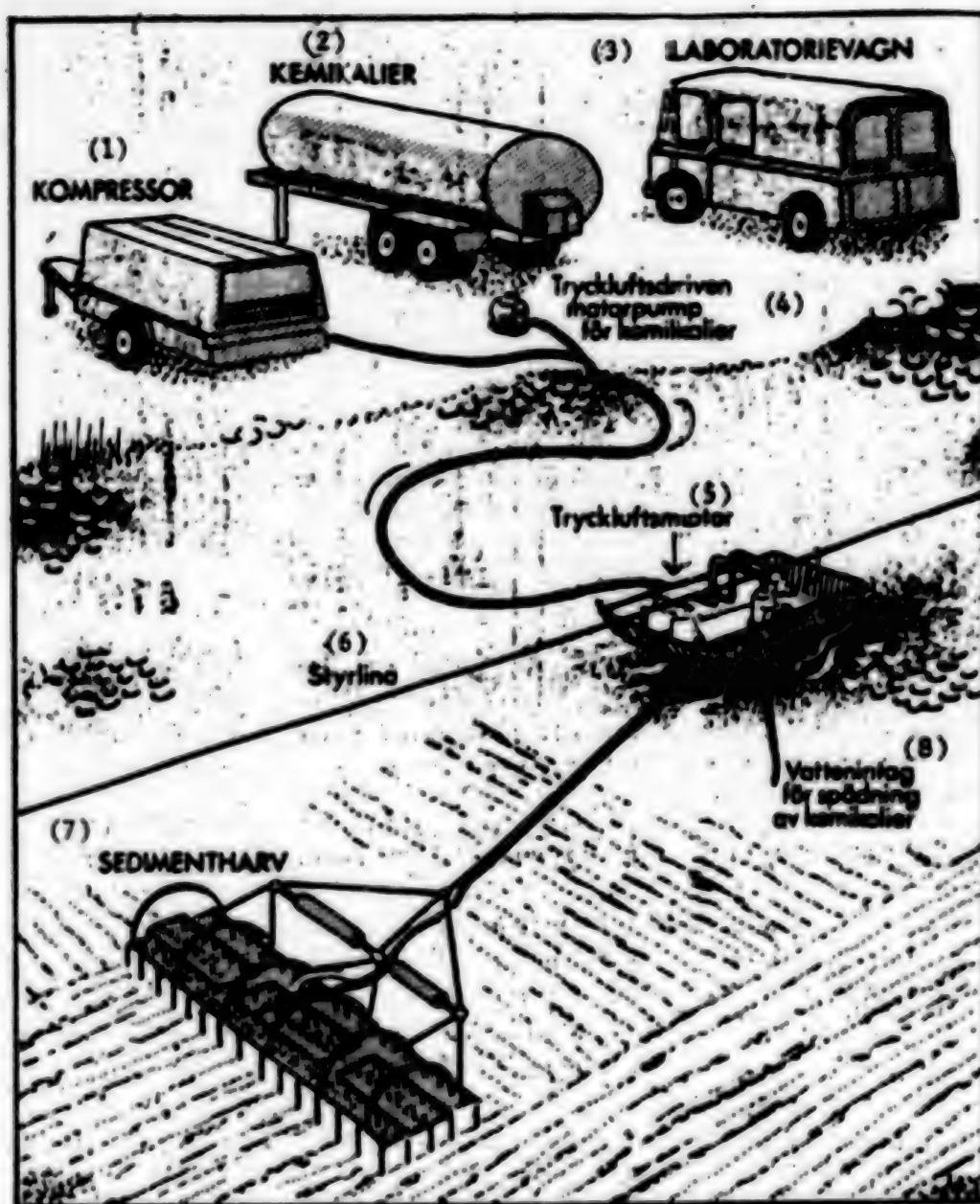
"The surface is oxidated so that it binds phosphorus in particular?"

"That's right."

They have also developed new methods of dealing with acidified lakes in Lund--a prominent man in this area was Willy Ripl, Bjork's colleague who has now become a professor in West Berlin.

About half of all acidified lakes are brown lakes--their water is brown in color because of the humus content. Clear lakes can be limed in the usual way. But in brown lakes the lime particles are immediately coated with humus sediment which simply halts the dissolving process.

Sven Bjork told us about a new project that has just started. The same harrow-like tool is used--although it is considerably more developed--that injects oxidation agents into sediment. But in this project sodium hydroxide is raked in.



An instrument for healing Swedish lakes if they become sick. If fallout from the air lowers pH levels too much a harrow helps. This design was drawn by Atlas Copco for an order from Professor Willy Ripl. Chemicals are mixed and injected into sediment with the "harrow's" teeth. But this method cannot restore the original ecology of the lake.

- |      |                                      |  |
|------|--------------------------------------|--|
| Key: | 1. Compressor                        | 5. Compressed-air engine               |
|      | 2. Chemicals                         | 6. Guideline                           |
|      | 3. Laboratory truck                  | 7. Sediment harrow                     |
|      | 4. Compressed-air pump for chemicals | 8. Water intake for diluting chemicals |



"We are working on a lake where about 20 percent of the bottom area is being treated with sodium hydroxide. This means that the surface sediment is used to continue ion exchange--so that when the acid fallout comes to the lake the hydrogen ions are gradually exchanged for sodium ions, producing a long-term buffering effect, just as if the endangered lake had been moved from the acid area to Skane where the soil is rich in lime and does not become acid."

#### Well Under Way

It is hoped that this method can also be used to treat brown lakes.

The research is well under way in an effort to find refined methods enabling us to live with sulfur. Soon it will be possible for Atlas Copco to start mass producing the harrows with which we can treat at least 20,000 acid lakes and a fairly large number of overfertilized streams.

Our preparations have been good. We will probably soon succeed in relieving the symptoms of the hazards posed to nature by sulfur, hazards made evident by our sick lakes.

There are 20,000 dying lakes and there are no demonstrations on the streets. There hasn't even been a move to organize any central activity to save the lakes. Tons of fish die, the ecology is dying and cannot be replaced, but this is happening so quietly, so imperceptibly, so stealthily that we become accustomed to the disease.

The sulfur also falls on our souls. The external environment is being filled with chemicals; imperceptibly we lose our resistance and allergies spread.

The sulfur falls. Culture has been defined as knowing what we are doing. We are liming the symptoms.

#### Ground Water

And we'll probably be doing more liming in the future. For it has been learned that in some parts of the country the ground water is severely affected. Some time after we met Bjork I called up Professor Erik Eriksson in Uppsala. He told me of new experiments made in Bohus County and in Halland and he was gravely disturbed by the situation. The water was more acid than they had suspected. And a good deal of aluminum had been found. The risk of cadmium levels that are too high is great. These metals are released from soils with a pH value that is too low.

Erik Eriksson referred me to Sigvard Johansson who said that the average level in 225 dug wells in the communities of Kungälv, Stenungsund and Lilla Edet was 5.55 pH. Normal water should have a pH value of 7.0 and

up. Many wells contained more than 1 milligram of aluminum per liter. The toxic limit (the poison limit for organisms in fresh water) is 0.4 milligrams per liter. The levels for Halland according to a report that has not yet been published were about the same as those in Bohus County, Professor Eriksson said.

(The next article in this series deals with water around the world. Previous articles dealt with air quality in Sweden, 20 January, and air quality around the world, 26 January. Lars Emmelin from the Environmental Protection Program in Lund is assisting Karl Erik Lagerlof with the interviews and with the accuracy of technical details in the articles.)

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PRODUCT CONTROL BOARD POSTPONES CADMIUM USE PROHIBITION

Stockholm SVENSKA DAGBLADET in Swedish 19 Jan 80 p 7

[Article by Lennart Lundegardh]

[Text] It won't be possible to implement the government's decision last fall to ban the use of the poisonous metal cadmium in certain products starting 1 July 1980.

The Product Control Board is asking the government for a postponement until 1 January 1983.

When the Product Control Agency and the business world started looking into cadmium quantities used as colorants, stabilizers and finishing agents last fall they found--as SVENSKA DAGBLADET reported earlier--that the metal occurred in much larger quantities than anticipated and that it was used in an unusually large assortment of products.

The agency had the job of working out implementation regulations and expected from the start that some general exceptions would have to be made.

But when figures and information started flowing in agency workers turned pale. Total imports had been estimated at about 60 tons a year. A German report dealing solely with cadmium in dye pigments and as a stabilizer ended with a total of around 200 tons from EEC countries alone.

Nobody suspected when the proposal was made and the government made its decision that there was so much cadmium in circulation. One example: the last time KF [Consumers' Cooperative Union] buyers were in the Far East to buy Christmas decorations they were instructed to avoid products containing cadmium. They were told that in that case there was nothing available for them to buy.

All in all it was realized that it would be an impossible administrative, economic and practical problem that could not be solved as early as 1 July of this year.

Now a postponement of the starting date until 1 January 1983 is being requested but even then it will be impossible to avoid granting a number of general exceptions.

"The extent of cadmium use really shows how important it is for us to do something about management," said the head of the Product Control Agency, Ingrid Kokeritz. "This explains the latest figures of atmospheric cadmium fallout over Sweden, 60-100 tons annually.

"To date Sweden has been the only country to respond to a warning from the World Health Organization (WHO) to limit the dispersal of cadmium. We must hope that others will follow our lead."

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## ENGINEER CRITICIZES HANDLING SYSTEMS FOR HAZARDOUS WASTE

Stockholm DAGENS NYHETER in Swedish 1 Feb 80 p 5

[Article by Gun Leander]

[Text] Norrköping, 31 Jan--At least 100,000 tons of hazardous waste is produced annually in Sweden. We don't have the capacity at this time to treat the waste here. It is stored by industries, dumped illegally or exported.

In some regions municipalities collect only about 10 percent of the hazardous waste even though they have a monopoly on collection, civil engineer Curt Larsson of Södertälje said at a meeting on "hazardous waste and the environment" held in Norrköping by the Swedish Sanitation Sales Agency.

"SAKAB (Swedish Waste Conversion Company) is planning a plant in Norrtrorp in Kumla but it is not really big enough. In order to accept all environmentally hazardous waste it would have to be five times as big," engineer Larsson said.

The government must make a decision this spring on the sharply-criticized Norrtrorp facility which would have a capacity of 100,000 tons. It would be ready by 1982 at the earliest.

"We must find a solution to the problem of hazardous waste in the 1980's," said chief engineer Leif Wannholt, Göteborg City Sanitation Agency representative. "The legislation was passed back in 1975 but it has not been implemented.

"The municipalities were supposed to introduce a hauling monopoly and SAKAB was to be in charge of the state treatment monopoly. The implementation was to occur in stages and be completed this year with the municipal approval of the so-called sanitation proclamation list. The nine communities that have assumed this responsibility so far out of the 277 in the entire country are Uppsala, Stockholm, Åre, Göteborg, Hälaryd, Kungälv, Molndal, Falkenberg and Halmstad."



The problem is that no one really knows how much hazardous waste there is and no one wants a central waste disposal plant in his home town.

It became clear during the Norrköping meeting that many municipal sanitation people suspect that there are many poison containers of the type used by BT Chemicals in Teckomatorp buried around the country.

#### Not Industrial Spills

Some lakes in central Sweden have been found to contain high levels of quicksilver although this cannot be blamed on industrial spills. Poisons are usually thrown out with the trash or buried in gravel pits. However industries have recently become more interested in recycling their own hazardous wastes.

There is even a special market, the trash market, where industries can offer their trash to anyone who wants to use it as a raw material for new products.

Every day thousands of tons of hazardous chemicals are transported through densely-populated communities. Thus it is estimated that in the course of a year almost 1 billion tons of 100-percent sulfuric acid, an equal amount of such explosives as gunpowder and 60,000 tons of poisonous organic substances such as phenol, arsenic and quicksilver are transported.

As raw materials these substances are closely supervised by industry since they have a high commercial value. As waste they cost money to dispose of.

When industries were required in 1978 to declare environmentally hazardous wastes the total figure was 482,000 tons. Most of this was oil waste. Industries themselves took care of 214,000 tons, almost half, while SAKAB took care of only 7 percent of the total amount.

Industry does not know how to dispose of 12,000 tons of hazardous waste a year. And no one has yet found a method of disposing of another 11,000 tons of oil residues.

#### Without Permits

About 200 firms across the country accept hazardous wastes, most of them without permits from any environmental agency. From 1000 to 1500 firms transport the waste but only 400 have permits from county governments. A clean-up of the branch is expected now that the local communities have been forced to assume responsibility.

Göteborg has gone farther than most other communities in handling waste. A municipally-owned company has been set up there for the collection of

hazardous waste. But in spite of its 8-year monopoly Goteborg collects only a third of all its hazardous waste. The rest is "in the works" or mixed in with ordinary household trash.

"Germany, France and England are among the countries accepting our waste. There are many problems involved in exporting. Trash must be stored for long periods of time awaiting the completion of various international formalities, a process that is both risky and expensive," said SAKAB market director, Karl-Axel Hjelte.

"That is why we want to build a central treatment plant in Norrtoorp in the town of Kumla," he said. The government will decide on this in the spring but local opinion has been negative. No one wants to live close to the enormous facilities involved here.

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# REINDEER SUFFER STOMACH ULCERS AFTER HELICOPTER HERDING

Stockholm DAGENS NYHETER in Swedish 2 Feb 80 p 28

[Article by Ake Lidzell]

[Text] Sundsvall, 1 Feb--Are reindeer that are herded by helicopter subjected to so much stress that they develop stomach ulcers? That question has been discussed many times and came up once again Friday when it was disclosed that 80 percent of the reindeer being slaughtered at Mittadalen's Lapp village in Harjedalen have ulcers! This was reported by veterinarian and researcher Claes Rehbinder of the Uppsala Veterinary College who made the check of the animals' internal organs that is required in connection with slaughtering operations.

Herdning reindeer from their grazing ranges for branding and slaughter is generally regarded as stressful for the reindeer but Claes Rehbinder would not guarantee that this was the cause of the ulcers that were found. There is too little evidence available.

Claes Rehbinder is taking part in the reindeer roundup to study the animals' reactions to being herded together with helicopters and to running around in a corral for several hours before being lassoed one by one and dragged off for slaughter. One of the purposes of the study is to see if the stress experienced by the reindeer causes disease.

"The ulcers are the same kind people have," said Claes Rehbinder. "Some of the reindeer have scars in the intestinal wall from old ulcers. Presumably these resulted from the fall herding.

"The stress flared up again when they heard the sound of the helicopters in this roundup for slaughter, leading to the ulcers."

The reindeer stomachs and other internal organs will be studied more thoroughly in the laboratory.

On a helicopter drive DAGENS NYHETER witnessed in the fall the reindeer appeared to react calmly to helicopter herding. They seemed so used to the helicopters and the sound of the engines that signal horns had to be used to get them to move in the desired direction.

The whole study has an economic background. They want to know if reindeer under stress produce lower slaughter weights and if stress affects the taste of the meat. That is something they don't know yet.

A single study seemed to show that reindeer that have run around in a corral waiting for slaughter had more stress hormones than those shot in the field from a distance.

But the Lapps themselves say it is hard to make any general statements about helicopter herding.

"It depends on how it's done," reindeer owner Lars Gunnar Thomasson, head of Mittadalen's Lapp village, told DAGENS NYHETER. "No reindeer owner wants to put stress on his animals for humanitarian reasons and of course we don't want to damage the meat either."

"When the reindeer owner goes along in the helicopter and the pilot operates the helicopter smoothly and carefully I don't think helicopter herding is at all harmful.

"Properly done helicopter herding is less stressful than herding with snowmobiles and reindeer dogs," Lars Gunnar Thomasson said.

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